MACPHERSON'S

MUNICIPAL ACCOUNTING

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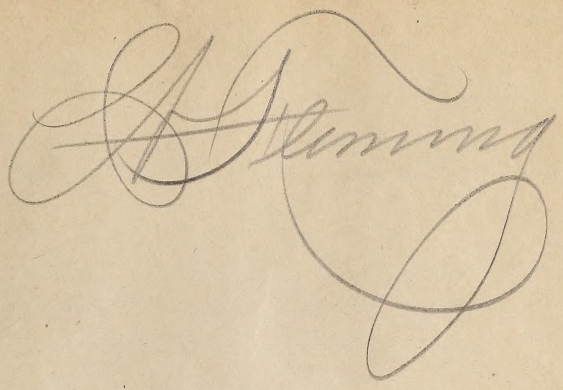

Municipal Accounting

A COMPREHENSIVE TREATISE ON THE SUBJECT OF MUNICIPAL ACCOUNTS, ILLUSTRATED BY SPECIMENS OF IMPROVED FORMS OF BOOKS AND REPORTS.

INCLUDING

Sinking Fund and Instalment or Annuity Tables, for terms of Two to Thirty years at rates of Interest from Two to Six per cent.

AND OTHER LABOR SAVING TABLES.

BY

F. H. MACPHERSON, C. A.,

A MEMBER OF

THE INSTITUTE OF CHARTERED ACCOUNTANTS OF ONTARIO,

WINDSOR, ONTARIO.

PUBLISHED BY

The Book-Keeper Publishing Company, Limited,

DETROIT, MICHIGAN.

1901

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INTRODUCTORY.

A HEALTHY municipal life is not possible, except under conditions of good government, and good government is not altogether attainable unless those charged with the responsibility have at their disposal the fullest and most explicit information as to the standing and condition of the corporation as revealed by its accounts.

The accounts must, therefore, be stated so as to admit of the most searching inspection and examination, with a view to obtaining therefrom all desired information, either by the civic representatives or by the official charged with that duty. One eminent author says: "The object of all good book-keeping is the exhibition of the growth or decline and present value of capital, and of each of the parts of which capital is made up. A perfect balance sheet shows all this in the clearest and most concise manner. A perfect balance sheet should not only give the present value of each of the component parts of capital, but should also indicate its growth and decline since the last statement. The one object of the skilled book-keeper is, therefore, to be able to produce, when necessary, a clear and correct balance sheet."

In very few instances can be found any system of municipal accounts which within itself exhibits the true condition of the affairs of the municipality. Financial reports, as ordinarily presented, may exhibit a correct statement of the receipts and expenditures, but rarely, if ever, is the statement of assets and liabilities anything more than an approximate estimate of the position of the corporation. Why this is so one need not be altogether at a loss to understand, when one stops for a moment to consider the circumstances which usually surround the appointment of the officials charged with the responsibility of preparation of such a statement. The requirements of a perfect balance sheet cannot be satisfactorily met, unless the system of accounts provides for the application of the principles of double entry to all transactions into which money or money values enter.

Specification for Municipal Balance Sheet.

IN THE specification on this page will be found an analysis and classification of the several items which enter into the accounts of the average municipality; and if followed in principle, the treasurer will be enabled at all times to furnish a complete and satisfactory presentation of the standing of the corporation. The analysis of accounts which is herewith presented in chart form, is that which is required where the balance sheet is made an integral part of the system of book-keeping.

Specification for Municipal Balance Sheet,
Analysis and Classification.

Revenues and Disbursements.

Revenue....

ORDINARY:
- Cash on hand and in Bank
- Taxes, divided as to years
- Licenses
- Schools, divided as to Public, High and Separate
- Water Rates
- Electric Light
- Franchises
- Fines and Fees
- Rents
- Interest
- Other Sources

EXTRAORDINARY:
- Loans, Current Account
- Debentures, General
- Debentures, Local Improvement
- Sinking Fund
- Sinking Fund Interest
- Other Sources

Expenditure

ORDINARY:
- Salaries
- Waterworks
- Electric Light
- Grants and Charities
- Board of Works
- Fire
- Administration of Justice
- Police Department
- Health
- Parks
- Market
- Library
- Schools, divided as to Public, High and Separate
- Printing, Advertising and Stationery
- Interest
- Rebates and Allowances
- Contingencies
- Other sources

EXTRAORDINARY:
- Loans, Current
- Debentures, General
- Debentures, Local Improvement
- Interest—General Debentures
- Interest—Local Improvement Debentures
- Sinking Fund
- Public Works in progress
- Local Improvements in progress
- Other sources

Assets and Liabilities.

Assets....

ACTIVE.....
- Cash on hand
- Cash in Bank
- Taxes { Current / Arrears
- Water-Rates
- Light-Rates
- Rents
- Advances, Public Works in progress
- Advances, Local Improvements in progress
- Other Advances

RESERVE.....
- Sinking Fund, General
- Sinking Fund, Local Improvements
- Special Trust Funds

FIXED.....

NECESSARY INVESTMENTS.
- Waterworks System
- Electric Light System
- Fire Halls and Apparatus
- Market
- School Buildings and Equipments
- City Hall and Furniture
- Public Library
- Public Park
- Real Estate
- Hospital
- Public Works Equipment
- Other necessary Investments

SPECULATIVE INVESTMENTS.
- Stock in Railways
- Stock in Gravel Road Companies
- Other Speculative Investments

PASSIVE.....
- Bridges
- Sewers
- Pavements
- Bonus Account
- Local Improvements

Liabilities

BONDED .....
- Debentures, General
- Debentures, Local Improvement

FLOATING ....
- Debentures, due and unpaid
- Coupons, due and unpaid
- Loans, Current
- Loans, Local Improvement, in progress
- Accounts payable
- Other Indebtedness

CAPITAL.....
- Surplus of Assets over Liabilities

Designed by F. H. Macpherson, C. A.

It must be remembered that in the description of any model or system, it is essentially necessary to include more in items and detail than will be found requisite in any one municipality. If the illustration is to be of any service it must of necessity be exhaustive and complete in all its details, local conditions governing as to selection in individual cases.

ASSETS.

The assets are again subdivided into four classes—active, reserve, fixed, and passive.

Active assets comprise cash, which includes the amounts in the treasurer's hands, and the balances due from the bank on accounts current; taxes current, outstanding; tax arrears, outstanding; water rates; electric light rates; rents; advances on account of permanent public works or local improvements; and miscellaneous.

Reserve assets include sinking funds on general, or local improvement accounts, and other specially invested funds.

Fixed assets are subdivided under two heads, viz: necessary investments, and speculative investments. The first includes all permanent investments, as waterworks system; electric light system; fire hall and apparatus; market; school buildings and equipments; city hall and furniture; public library; parks; real estate; public works

equipment; and other investments of a like nature. The second includes stock held in railway or gravel road companies, or such other enterprises of a public nature as are permitted by statute.

Passive assets represent investments which, while somewhat permanent in character, are intended to be written off as the debentures issued to cover the cost thereof are redeemed; the life of the work and of the debentures intending to be concurrent. In this class is also included the item of local improvements, of an amount equal to the debenture indebtedness outstanding on that account, an annual reduction being made, equivalent to the yearly redemption of debentures. Advances by way of bonus also come under this head, the amount to be written off annually running concurrently with the retirement of the debentures which produced the original amount of the bonus; in cases where certain conditions, as, for instance, the employment of a certain amount of labor, are involved, then the sum to be written off annually will depend on the extent to which the stipulations upon which the granting of the bonus was based, have been fulfilled.

LIABILITIES.

The second division of the balance sheet—the liabilities—is divided into three classes, viz: bonded, floating, and capital.

Bonded liabilities is subdivided under two heads, (1) debentures, general, and (2) debentures issued on account of local improvements, this latter being a direct liability, but secured by collateral.

Floating liabilities comprise debentures due and unpaid, coupons due and unpaid, loans current, loans on local improvements in progress, and accounts payable.

Capital liability represents simply the surplus of assets over liabilities.

REVENUES.

The municipal revenues for each year consist of the debts accruing due by levy or otherwise from all and sundry to the corporation, although these may not necessarily be collected within the period. Land taxes, water rates, electric light rates, licenses, school grants, and fines and fees, form the ordinary sources of revenue; while the extraordinary revenues are derived from sale of debentures, temporary loans, sale of public property, franchises, and the like.

The details of the various sources of revenue having been ascertained, they should at once be made a matter of record, in books especially designed for the purpose, with such accompanying particulars as will, either at the present or in the future, give all needed information. These records are in the form of registers or rolls, as the tax roll, water rate roll, electric light roll, license register, market fees register, and such other books as are found to be necessary or convenient to cover the various forms or sources of revenue. All these registers or rolls should be susceptible of proof as to clerical correctness within themselves, the better plan being by the use of the columnar system of debits and credits. Accounts for each roll should find a place in the general ledger, the sum of the debits being entered at one operation. The counterbalancing entry will be to the credit of "revenue account." After the credits, in the form of collections, rebates, allowances, etc., are entered, the balances will represent the amounts appearing opposite the various items in the statement of assets, and should agree in each case with the amount of the outstandings appearing in the various rolls.

EXPENDITURES.

Ordinary expenditures are such as are incurred in the daily conduct and maintenance of municipal government, otherwise called operating expenses. The extraordinary expenses are in the nature of the redemption of debentures, and payment of interest thereon, repayment of temporary loans, construction of permanent buildings or other works, purchases of real estate, and so forth. The expenditures of a municipal corporation for a given year, are the debts contracted by the corporation within the particular period, even though they may not have been satisfied by payment. It is safe to say that while in the average municipality, the revenues will be exhibited at their true value in the

financial statement for the year, the expenditures will be found to be rarely so. The desire of the representatives of the ratepayers to show a surplus by omitting, often by deliberate design, to include in the expenditures debts contracted but unpaid, is the rule and not the exception. If a true and faithful statement is to be presented, all the accounts for debts contracted within the period should be passed by the council, and, if immediate payment is not possible, carried by the treasurer to the credit of the individuals, the debits being made to the proper accounts of expenditure. These debts will then be recorded as ledger liabilities, and will appear in the balance sheet as such, and the expenditures of the year will present a true statement of the condition of affairs.

CHAPTER II.

The Cash Book.

THE book of prime importance in all municipal accounting is the cash book. Other books of account are necessary and requisite, but the cash book is the central figure of the group—the final results culminating in the ledger entries. In many rural municipalities the cash book is practically the only one kept by the Treasurer, and the periodical analysis of the accounts falls generally to the auditors. As is well known, these officials have even a less intimate knowledge of the affairs of the corporation, than the treasurer, the result being that "confusion worse confounded" is the order of the day. In the province of Ontario considerable progress has been made along the line of an improvement in this direction, by the introduction of a uniform system of cash account, the use of which has been made compulsory. In the system adopted by the Legislature—and designed for use in rural municipalities, villages, towns, and cities having less than 15,000 population—the main considerations sought have been simplicity and correctness—with a minimum of labor, the completed result being an abstract statement of receipts and expenditures fairly well analyzed.

In the illustration given herewith, is found the form for counties, the ruling being practically the same for city, town, village and township accounts, changes in the headings being made to suit the different requirements. The opening entries in the illustration give the balance on hand and in the bank, these being carried to the total column. The various receipts have their various columns, and the additions to the total column exhibit with each entry the whole amount of income from all sources, while the additions of the individual columns gives the exact receipts in each department of the

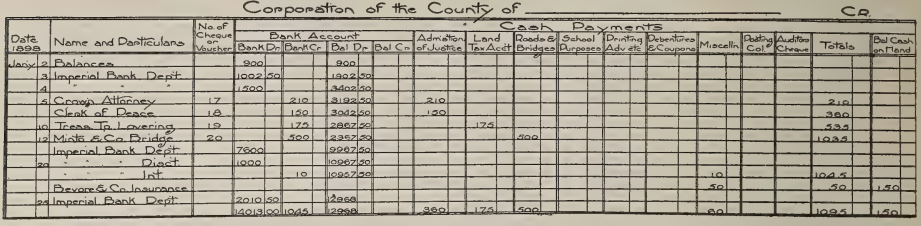
DD Corporation of the County of

Date 1898	Name and Particulars	Voucher No.	Cash Receipts: County Rates	Land Tax Act	Licences	Schools	Registry Office	Roads & Bridges	Admin. of Justice	Magistrates Fines	Debentures	Loans	Miscellans	Posting Col's	Auditors Cheques	Totals
Jany 2	Balance on hand												200			200
" "	" in Bank												900			1100
" 3	Tp. Mactap. Co. rate	13	1002 50													2102 50
4	Ontario Govt. School Grant	18				1500										3602 50
5	Co. Registrar Fees	17					500									4102 50
10	Ontario Govt. Act of '91	16							1950							6052 50
12	Debentures No 19 £ 5 Co	19									5000					10932 50
12	" Premium on do	20									250					11202 50
20	Imperial Bank Loan 5%	21										1000				12202 50
24	Tp. Rec. Co. rate		869 80													13072 30
" "	" Town		1040 70													14113 00
	Co. Clerk Auditoress				100 00											14213 00
			2913 00		100 00	1500	500		1950		3250	1000	1100			14213 00

Form 2—"Receipt" page of Government Cash Book.

accounts. The balance in the bank account is also carried continuously. Distribution of the payments is made as the charges are entered, the gross payments being carried in the total column. The correctness of the clerical work is proved by the addition of the balance of cash in hand, balance in bank and total payments, and these should agree with the gross receipts as recorded in the total column. The principles of the provincial

cash book are well exhibited in the illustration given, the limits of the page being too circumscribed to permit of a full page illustration.



Corporation of the County of _____ Co.

Cash Payments

Date 1898	Name and Particulars	No. of Cheque Voucher	Bank Account Bank Dr.	Bank Cr.	Bal. Dr.	Bal. Cr.	Admin. of Justice	Land Tax Acct.	Roads & Bridges	School Purposes	Printing Adv. etc.	Debentures & Coupons	Miscell'n.	Postage Col.	Auditor Cheque	Totals	Bal. Cash on Hand
Jany. 2	Balances		900		900												
3	Imperial Bank Dep't.		1002 50		1902 50												
4	" " "		1500		3402 50												
5	Crown Attorney	17		210	3192 50		210									210	
	Clerk of Peace	18		150	3042 50		150									360	
10	Treas. Tp. Lowering	19		175	2867 50			175								334	
12	Mintz & Co. Bridge	20		500	2367 50				500							1034	
	Imperial Bank Dep't.		7800		9267 50												
20	" " " Dep't.		1000		10267 50												
	" " " Int.			10	10257 50								10			1044	
	Bevere & Co. Insurance												50			50	150
24	Imperial Bank Dep't.		2010 50		12268												
			14013 00	1045	12968		360	175	500				60			1095	150

Form 3.—"Payment" page of Government Cash Book.

The headings showing the divisions of account as they appear in the various books are as follows:

TOWNSHIPS.

Receipts: (1) Resident Taxes, (2) Non-Resident Taxes, (3) Arrears of Taxes, (4) Dox Tax, (5) Fines, (6) School Purposes, (7) Licenses, (8) Debentures, (9) Bills Payable, (10) Loans, (11) Miscellaneous, (12) to (17). In blank for such other accounts as it is found necessary or desirable to exhibit individually.

Payments: (1) Salaries and Allowances, (2) Stationery and Printing, (3) Law costs, (4) Roads and Bridges, (5) Charity, (6) County Rates, (7) School Purposes, (8) Interest, (9) Board of Health, (10) Debentures, (11) Coupons, (12) Loans and Notes paid, (13) Deposits in Sinking Fund Account, (14) Drainage, (15) Miscellaneous (16 to 20) in blank, for such other accounts as it is found necessary or desirable to exhibit individually.

VILLAGES.

Receipts: (1) Bills Payable, (2) Resident Taxes, (3) Non-Resident Taxes, (4) Dog Tax, (5) School Purposes, (6) Licenses, (7) Fines, (8) Rents, (9) Debentures, (10) Loans, (11) Miscellaneous, (12 to 15) in blank.

Payments: (1) Bills Payable, (2) Salaries, Allowances, etc., (3) Printing, Postage, Advertising, (4) Interest, (5) Law Costs, (6) Roads and Bridges, (7) Charity, (8) School Purposes, (9) Debentures, (10) Coupons, (11) Fire Protection, (12) County Rates, (13) Loans Current, (14) Street Lighting, (15) Town Hall, (16) Deposited in Sinking Fund Account, (17) Miscellaneous, (18 to 20) in blank.

TOWNS.

Receipts: (1) Resident Taxes, (2) Non-resident Taxes, (3) Arrears of Taxes (4) Dox Tax, (5) Water Rates, (6) Rents, (7) Licenses, (8) School grants, (9) Debentures, (10) Loans, (11) Fines, (12) Market, (13) Miscellaneous, (14 to 17) in blank.

Payments: (1) Salaries and Allowances, (2) Printing, Advertising and Stationery (3) Insurance, (4) Fire, Water and Gas, (6) Law Costs, (7) Roads and Bridges, (8) Charity, (9) Debentures, (10) Coupons, (11) Bills Payable, (12) Interest, (13) Waterworks Capital account, (14) Waterworks Maintenance, (15) County Rates, (16) School Account, (17) Market, (18) Board of Health, (19) Sinking Fund, (20) Miscellaneous, (21 and 22) in blank.

CITIES.

Receipts: (1) Bills Payable, (2) Debentures, (3) Resident Taxes, (4) Non-resident Taxes, (5) Arrears of Taxes, (6) Interest, (7) Water Rates, (8) Market Fees, (9) Market Rates, (10) Police Fines, (11) Licenses, (12) Free Library, (13) Public Schools, (14) Miscellaneous, (15, 16 and 17) in blank.

Payments: (1) Bills Payable, (2) Interest, (3) Board of Works, (4) Free Library, (5) Public Schools, (6) High Schools, (7) Printing, Advertising and Stationery, (8) Fire, Water and Gas, (9) Police Commission, (10) Parks and Trees, (11) Market House, (12) Salaries, (13) Debentures, (14) Coupons, (15) Board of Health, (16) Charity, (17) Water Works Maintenance, (18) Sewer Maintenance, (19) Deposited in Sinking Fund, (20) Miscellaneous, (21 and 22) in blank.

COUNTIES.

Receipts: (1) County Rates, (2) Land Tax Account, (3) Licenses, (4) Schools, (5) Registry Office, (6) Roads and Bridges, (7) Administration of Justice, (8) Magistrate's Fines, (9) Debentures, (10) Loans, (11) Redemption of Lands, (12) Division Court Fund, (13) Miscellaneous, (14, 15 and 16) in blank.

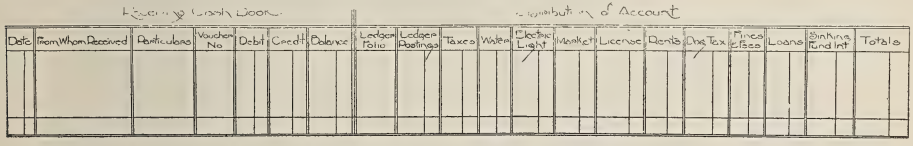
Payments: (1) Administration of Justice, (2) Land Tax Account, (3) Roads and Bridges, (4) Miscellaneous Grants, (5) Municipal Government, (6) School Purposes, (7) Registry Office, (8) Gaol, (9) Printing, Advertising and Postage, (10) Redemption of Lands, (11) Law Costs, (12) Debentures and Coupons, (13) Loans Current, (14) Interest, (15) Deposits in Sinking Fund, (16) County Property, (17) Insurance, Heat, Light, etc., (18) Division Court Fund, (19) Miscellaneous, (20, 21) in blank.

Objection is sometimes made to the labor involved in the carrying of the continuous balances. There might be force in this objection if the official were to follow slavishly the bringing down of the balances with every entry. While such a proceeding was necessary in the pro-forma sheet which is embodied in each cash book, it is not really expected or required in actual practice. The sum of all cheques entered at one time, or of all deposits, may be readily deducted from or added to the balances, at single operations. So long as the totals and balances are recorded at the conclusion of each day's business, the modus operandi whereby this is effected is of small moment.

THE TWO VOLUME CASH BOOK.

In the larger municipalities where the accounts are kept in greater detail, another form of Cash Account is recommended. In this the principles embodied in the cash books already described, are followed, with the columnar analysis reduced in some degree, in view of the fact that the ledger will be utilized to a much greater extent than is usual in most of the municipalities where the cash books previously described are used.

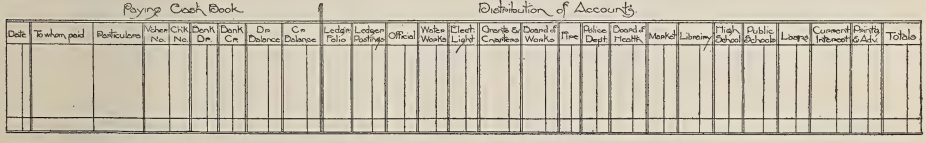
It is preferable that the general cash book should be in two volumes, the receiving cash book to contain all revenues, with analyzing columns for the representative sources of income. The form (4) fully exemplifies the idea.



Form 4—Showing Page of Receiving Cash Book.

As deposits are made in bank, credit is taken in the proper column, and the remainder in the balance column, exhibits the cash in hands of the treasurer.

The paying cash book contains the bank account in ordinary bank deposit ledger style, with the distribution of accounts following. Form (5) makes further explanation unnecessary.



Form 5—Showing Page of Paying Cash Book.

Where the volume of business requires a division of labor, the two-volume cash book becomes a necessity.

ABSTRACT REPORTS.

The prime advantage of the Columnar Cash Book is that the official is enabled to prepare with a minimum of labor, a daily, weekly or monthly abstract of receipts and disbursements for transmission to the council or auditors.

Corporation of the County of _____

Statement of Receipts and Disbursements

_____ 189__ to _____ 189__

Receipts	As at Last Report	As since Last Report	Total	Disbursements	As at Last Report	As since Last Report	Total
Balance on hand				Administration of Justice			
" in Bank				Land Tax Account			
County rates				Roads and Bridges			
Land Tax Account				Municipal Grants			
Licences				School Purposes			
Schools				Registry Office			
Registry Office				Gaol			
Roads and Bridges				Printing, Stationery, etc			
Administration of Justice				Redemption of Lands			
Magistrates Fines				Law Costs			
Debentures				Debentures & Coupons			
Loans				Loans Current			
Interest				Interest			
Redemption of Lands				Sinking Fund			
Division Court Fund				County Property			
Miscellaneous				Insurance Heat Light etc			
				Division Court Fund			
				Miscellaneous			
				Balance due from Bank	$		
				Balance on hand			
	$				$		

Certified Correct

_____

Co. Treasurer

Form 6—Abstract Statement of Receipts and Disbursements, as Applicable to Counties.

The form above is fairly full and comprehensive, being to some extent comparative, when taken in conjunction with the previous report.

CHAPTER III.

The Journal.

THE aim of many book-keepers of the present day is to do away altogether with the journal, and, to accomplish this, matter entirely foreign to the cash account, is often introduced therein. While it is desirable to use the journal to the least possible extent, yet it cannot be altogether dispensed with, it is necessary that the introduction of rates and revenues should be recorded in the journal, the transfer of entries, the correction of errors, which may occur, the collating of the municipal "profit and loss" account, and the closing entries of each fiscal period.

CHAPTER IV.

The Ledger.

THE ledger does not differ from the form in use for commercial purposes, nor do the principles involved in the keeping thereof differ in any material point. The material for a perfect balance sheet should be contained between the covers of a properly kept ledger, and such a balance sheet will show in concise form the exact financial position of

the municipality. In the allocation of the various accounts in the ledger, regard should be had to the position which they occupy in the balance sheet and revenue account. Much time will be saved, both to the officials and the auditors, if the details of all transactions be fully set out in the ledger. If, as properly should be, the treasurer were compelled by the auditors to prepare the annual statements and submit the same to them for inspection, the advantage of giving the particulars of each entry in the ledger would be much more deeply impressed upon that official.

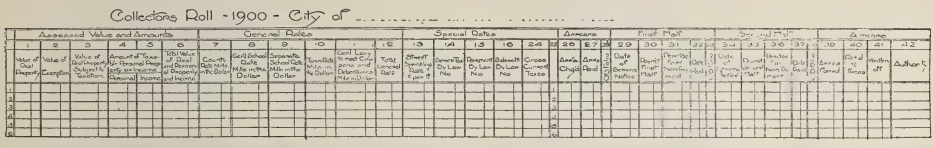
CHAPTER V.

Subsidiary Books.

IT IS of great importance that the utmost facilities should be provided for internal checking, in the preparation of the various subsidiary books, as the water rates, electric light, and collector's tax rolls. In the case of the collector's roll, a form largely statutory must be used. In the other departments mentioned, such records may be kept as are prescribed by the council or adopted by the officials, and these are perfect or imperfect, according to the ability of the designer.

THE COLLECTOR'S ROLL.

As stated above, the form for this is largely statutory, and one is bound to admit, speaking from the accountant's standpoint, there is much room for improvement. I have prepared a sketch which I am inclined to say would much better fill the requirements of the municipality, and satisfy the accountant, than the stock form ordinarily in use. Provision is made for a complete internal check. As many columns would be required for special rates as there are local improvements.


Collectors Roll - 1900 - City of .....

Assessed Value and Amounts						General Rates					Special Rates						Arrears		First Half		Second Half				Arrears		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	24	25	26	27	29	30	31	32	34	35	36	37	39	40	41	42
Value of Real Property	Value of Exemption	Value of Real Property Subject to Taxation	Amount of Taxable Personal Property and Income Assessed		Total Value of Real and Personal Property and Income	County Rate in the Dollar	Civil School Rate in the Dollar	Separate School Rate in the Dollar	Town Rate in the Dollar	Local Improvement Rate in the Dollar	Total Current Rate	Amount Levied by Local Bylaw	Amount Paid by Law No	Amount Paid by Law No	Amount Paid by Law No	Gross Current Taxes	Arrears Unpaid	Arrears Paid	Date of Demand of Notice	Amount First Half	Penalties First Half	Date Paid	Amount Second Half	Penalties Second Half	Date Paid	Total Arrears Formed	Arrears Paid	Written off	Arrears Outstanding
1																															
2																															
3																															
4																															
5																															
6																															

Form 7.—Showing Improved Collectors' Roll.

COLLECTOR'S CASH BOOK.

The collector's cash book should be ruled so as to show in its various columns the moneys collected for arrears of taxes, for percentages, and the current taxes should be analyzed in accordance with the divisions which have been made in the posting of the several items to the ledger, with a column for credits, as payments are made to the treasurer, also for date of payment, and signature of treasurer.

THE ASSESSOR'S ROLL.

Being statutory in form, and covering pretty accurately the necessary data required for the preparation of the collector's roll, no changes are suggested in the ordinary form.

WATERWORKS ACCOUNTS.

The forms presented herewith cover the principal books of accounting in a waterworks department, and are more especially designed for use where the waterworks, though under corporate ownership, are controlled by a commission. With slight changes they may be utilized and made to form a part of the system if under the control of the treasurer, the principles involved in both cases being the same.

The water rate register contains on one page the house number, assessment roll number, office progressive number, name of occupant, owner, street, ward, etc., in detail; then comes the assessed value, upon which is based the property charge, and the special rates for which charges are levied. These, of course, vary with the different methods of imposing

rates. The various rates are totalled in the column for that purpose. The right hand page is of the most importance to the accountant. The progressive office numbers are repeated for ready reference purposes. Next comes the "arrears from previous year," with the "pro-number" for that year, and next is the "rate for half year," which is just one-half the rate in the total column on the page opposite. It may be said that the writing in of this column each term is unnecessary work, but the internal check cannot well be provided in any other way; and for the further reason that rates may vary term by term. The headings of the columns which follow are self-explanatory. In the cash columns will be entered in the upper left-hand corner the cash book folio. In the deduction column is entered all abatements or allowances made on account of "no horse," "no cow," no "double tenancy," etc., the receipt of which abatements must in all cases be acknowledged by the signature of the recipient to a "deduction slip." The percentage column is called into use immediately upon the expiration of the date set for payment of rates without the imposition of the penalty, when each delinquent's account is charged with the additional rate. While the percentages are being added, the closing up of the individual accounts is being proceeded with, by the carrying forward of all unpaid amounts to the "arrears forward" column. This accomplished, the various columns are footed and checked, when the sum of the debit columns must equal the sum of the credit columns.

RATED WATER REGISTER WARD NO. SUB-DIV NO. YEAR ENDING DEC. 31 190

House No	Assess Roll No.	Pro No.	Owner	Occupant	Block	Side of Street	Street	Lot No	Other Description	Ass'd Value	Description of Rates Imposed: No rooms	House rate	Store	Bath	Closet	Horses	Cows	Lawns	Lawn Rate	Special Rates	Particulars	Rate	Tot. Gross Rate

Form 8.—Left-hand page of Water Rates Register.

RATED WATER REGISTER WARD NO. SUB-DIV NO. YEAR ENDING DEC. 31 190

Remarks	Pro No.	Pro No Previous Year	Arrears Previous Year	Half year payable Apr 20: Rate for Half Yr.	Arrears Pd	Current Pd	Discount or Deductn.	Arrears Forwd	Half year payable Oct 20: Rate for Half Yr.	Arrears Pd	Current Pd	Discount or Deductn.	Arrears to Dec 31: Arrears Forwd.	Arrears Pd.	Deductns	Arrears Forw'd	Pro No. Next Yr	Remarks

Form 9.—Right-hand page of Water Rates Register.

Form 10 illustrates the "receiving cash book," and requires no explanation from me. In the case of a Commission the "credits" column records the bank deposits, and if the payments are handled through the treasurer's office, the amount transferred to the general cash book.

She gross rates levied are charged to water rates account half-yearly, the contra entry being to revenue account. At the close of each term, the deductions, discounts, etc., are credits to water rates account, and a corresponding debit is made to water rate discounts, which ultimately finds its way to the debit of revenue account. Percentage is a debit to water rates account and a credit to revenue.

WINDSOR WATER COMMISSION
CASH RECEIVED

Date	Particulars Pro No	Special Register	Metered Water	Arrs Rated Water 190	Arrs Current Rated Water	Current Rtd. Water	Credits	Balance	Discounts & Deductions

Form 10.—Water Rates Receiving Cash Book.

A separate register is maintained for use in the recording of metered water, an excellent form for which is given herewith.

Windsor Water Commission
Metered Water Register

Name	Street Meter owned by Annual Meter Rent $	Make Size No.	Date set Date removed Rec'd from Mf'r.

Date of Reading	Readings	Feet	Gallons	Rate Gross	Rate of Disct.	Gross Amount	Meter Rent	Total	Arrears to Pay	Disct. or Red'n	Rec'd. Water Rates	Rec'd Meter Rent	C.B. Folio	Arrears Carried Down	Remarks

Form 11.—Metered Water Register.

WINDSOR WATER COMMISSION
SPECIAL REGISTER

Date	Name	Particulars	Vouch'r No		Con-struction	Misc'l-laneo's	Certificts.	Spec'l. Water	Permits	Total Chg's.	Additns.	Deductns.	Am't Rec'd	C.B. Folio

Form 11a.—Special Register.

Where the waterworks are handled by commissioners, who disburse their own funds, a combination cash book and voucher register is used, as per Form 12. The principles applied here are the same as those employed in the provincial cash book, and require no further elucidation. The distribution of accounts is divided into five general headings, "office," "pumping station," "distributing system," "meters" and "general," and these are again subdivided to the regular accounts to be found under each.

WINDSOR WATER COMMISSION
VOUCHER CASH

Date	Particulars		Voucher No	Debit	Credit	Dr. Balance	Cr. Balance

WINDSOR WATER COMMISSION
DISTRIBUTION OF ACCOUNTS

Office				Pumping Station					Distributing System				Meters			General					
Salaries	Supplies	Rebate		Salaries	Fuel	Supplies	Repairs	Constrn	Wages	Supplies	Repairs	Constrn	Repairs	Supplies	Constrn	Debts & Int.	Legal	Analysis	Misc.	Totals

Form 12.—Voucher Cash Book and Register.

TAX RECORDS.

In the matter of keeping records of the arrears of taxes there is great diversity of method. The larger corporations are usually more careful in the keeping of these accounts, but there is yet a lamentable lack of an efficient means of "ready reference." An index prepared in three parts, each of which relates to the other, while some trouble to prepare will be found to prove of great value as a time saver. Part one is an alphabetical index of the streets, referring to part 3, as seen in the illustration.

STREET INDEX

Name of Street	Index Folios								
Adelaide	15	17	22	23	24	29	65	67	
Aurelia	85	86	87	88					
Arnold	93	95	98						
Baldwin	32	33	34	35	36				
Baxter	89	90							
Carleton	91	92							

Form 13.—Street Index (Part. 1).

Part 2 is a list of the different plans, commencing with the Crown or Government survey, and also referring to Part 3.

Part 3 is the index proper. Each lot is given a line to itself, and every parcel of property in the corporation is gathered into the index under its proper street and plan.

PLANS

No	For whom Surveyed	By whom Surveyed	Index Folios
1	Old Survey	Crown	15 to 27
2	Thos. Beattie	A. P. Salter	27 28 29
3	R. S. Wood	R. Parr	31 to 38
37	G. Thomas	do	39 to 43
46	Read & Pegley	Salter & Jones	43 to 49
40	Jno. Northwood	W. G. McGenze	104 105

Form 14.—Index of Plans.

When the uncollected taxes have been returned to the treasurer, an account is opened in the lot ledger (if one be not already opened) for each property against which there is arrears, and the ledger folio entered opposite the lot in Part 3 of the index. As the arrears are paid the ledger folio is marked off. When a search is required, reference is made to the index. If there are no folios against the lots, or if crossed off, there are no arrears, and the search is completed; always presuming, of course, that the work is faithfully done, upon which foundation the value of any system must depend. When posting from the collector's roll to the lot ledger, the posting folios should be entered in each book for ready reference.

OLD SURVEY

No. of Block	No. of Lot	Fronting on Street		Ledger Folios
	1	N. Water		
	2	S. Stanley		60
	3	S. Stanley	E. Ninth	
	4	N. Water	E. Ninth	
	5	N. Water	W. Ninth	59
	6	S. Stanley	W. Ninth	
	7	S. Stanley		20
	8	N. Water		
	9	N. Water		
	10	S. Stanley		10

Form 15.—Index to Lots.

In a paper read before the Institute of Chartered Accountants some years since, by the late Mr. Powis, it was suggested that in case of minor municipalities, arrears of taxes should not be reported to the county treasurer "unless and until the arrears have reached that point when the land is liable to be sold for taxes." In this suggestion I most heartily concur. This phase of municipal government as it stands at the present time is most prolific in loss, trouble and annoyance.

My sentiments also are practically voiced in his remarks as to the proper method of procedure prior to sale. "After the time has passed during which taxes ought to be paid in each year, a return should be made by the minor municipality to the county, showing what properties are then liable to be sold for taxes. Only between such date and the day of sale, and only concerning such properties as are liable to be sold, should it be necessary to apply to the county officer at all. A sale should be held by the county officer only once in each year, when there is any property liable to be sold. Such sale should be held before

the time for striking the rate by the municipality. Immediately after the sale the county officer should make a return to the minor municipality, showing the result of each sale, and remitting the money collected, after deducting his charges. The transactions of each year should thus be closed and balanced. The only record necessary then on the part of the county officer is a full account of the circumstances connected with each sale and the result. And it is not necessary that the county officer should keep any further account concerning arrears of taxes. This system and process should go on from year to year, the county officer acting each time solely on the new report handed him from the minor municipality." There would then be no mixing up of the township and county business. Full remittance would be made to the minor municipality for the proceeds of the tax sale, and the local municipality should then remit in full to the county treasurer for the county rate. In cases of redemption the county officer's receipt would be a sufficient voucher for the township treasurer, upon which to return the purchase price to the vendee at the tax sale.

Till such time as our legislators may be brought to see the necessity for simplification of the methods as at present prescribed by the statutes, these methods must be followed. In the majority of rural municipalities, great carelessness exists in keeping the records pertaining to these arrears. In most townships absolutely no account is taken of the arrears, once they have been sent to the county treasurer, and no check is had thereafter upon either official. County auditors in a number of instances have declined to go into the county treasurer's accounts relative to these arrears, on the ground that such was outside the scope of the audit, and that the county treasurer in keeping these accounts was the agent of the rural municipalities and not of the county.

If a systematic record upon the following lines be kept, no difficulty will be experienced in maintaining a perfect and accurate account of tax arrears:

The clerk of the minor municipality to prepare the non-resident roll in duplicate, sending one copy to the county treasurer and the other to the treasurer of his own municipality, who will, upon receipt thereof, enter in a properly ruled lot book or ledger,

S.E. ¼ LOT 73 CON 2 (NON-RESIDENT)

May	1 95	N.R. Taxes 1894	14	50	14	50						
"	1 96	10%	1	45	15	95						
"	1 97	10%	1	59	17	54	Nov	1 97	Co Treas	17	54	17 54

Form 16.—Ledger Specifications for "Non-Resident" Lands in Arrears for Taxes.

the charges against each property affected. Upon receiving the return of "uncollected taxes" from the collector the treasurer should, in like manner, and in the same book, enter all properties returned, with the amounts against each. Upon May 1st in each year, (the date set for the statutory addition of 10 per cent.) the county treasurer should prepare a statement in detail of the percentages added by him to the various arrears, transmitting the same to the several treasurers of the minor municipalities, who in turn will enter the amounts so reported against the respective lots in the lot ledger. As payments are made to the county treasurer, he is required by the law as it now stands to prepare receipts in triplicate—one of which goes to the payor, the second to the county clerk, and the third he retains. What good purpose the sending of the receipt to the county clerk is intended

N½ LOT 7 CON 10 (JOHN SMITH)

Date		Particulars	Charges		Total		Date		Particulars	Amnt.		Total	
May	95 1	Taxes 1894	61	00	61	00							
"	96 1	10%	6	10	67	10							
"	97 1	10%	6	71	73	81							
"	98 1	10%	7	38	81	19	May	98 30	Co Treas.	81	19	81	19

Form 17.—Specification for Resident Arrears Ledger.

to serve, I have never been able to discover. He files it away and that is the end of it. If, instead, the second receipt were sent to the clerk of the municipality interested, by that official to be carefully filed for the future us of the auditors, a better purpose would be served. Then, quarterly, the county treasurer should remit to the local treasurer, by cheque, the full amount of the taxes collected during the preceding three months, together with a statement showing the dates of payment, and the amounts of the several collections, when the necessary entries should be made in the cash account and lot ledger of the minor municipality. The accounts of the local treasurer would then at all times show the exact standing of the municipality as regards arrears of taxes.

The triplicate receipt is now not necessary—a duplicate receipt being sufficient—one copy going to the person paying the taxes; the other being retained in the treasurer's office.

DEBENTURE REGISTER.

A complete record of the debenture indebtedness of every municipality is of absolute importance. Before the debentures leave the hands of the Treasurer all particulars relating thereto should be entered in a debenture register, a very comprehensive form for which is herewith submitted. It will be observed that the fullest information is required to be entered as to the amount, years to run, dates payable, place of payment, annual payment of principal and annual payment of interest as represented by the coupons, dates due, and payments to the sinking fund, when the debentures are issued upon that plan. Other particulars, as to the number of by-law authorizing the issue, date of sale, persons to whom sold, date of delivery, amount received, divided as to principal, premium and accrued interest. Then the total amount to be raised annually by assessment, with particulars as to how much is from the individual property owners, in case the work, on account of which the debentures are issued, is in the nature of a local improvement. The specification given illustrates the idea for a ten-year debenture. The register should be ruled so as to cover twenty-year issues.

Register of Debentures issued by the of

Amount $ Term years

Debentures payable on the day of

at

Coupons for interest at per cent. payable yearly

on the day of 18 Equal annual payment on account

Debentures & Interest or annual payment to Sinking Fund Acct $

Debentures issued under the Authority of By Law No.

Date of issue 18 Debentures sold to

Delivered 18 Total amount annual levy $

Amount received { Principal $ Amount raised by Municipality $
Premium $
Acc. Int $
Total $ } Amount levied on property owners $

No	Debentures Year Due	Amount	Paid Cash Book Folio	Coupons No 1 due	Paid C D Folio	No 2 due	Paid C D Folio	No 3 due	Paid C D Folio	No 4 due	Paid C D Folio	No 5 due	Paid C D Folio	No 6 due	Paid C D Folio	No 7 due	Paid C D Folio	No 8 due	Paid C D Folio	No 9 due	Paid C D Folio	No 10 due	Paid C D Folio
1	1892	$ 100		4																			
2	1893	100		4		4																	
3	1894	100		4		4		4															
4	1895	100		4		4		4		4													
5	1896	100		4		4		4		4		4											
6	1897	100		4		4		4		4		4		4									
7	1898	100		4		4		4		4		4		4		4							
8	1899	100		4		4		4		4		4		4		4		4					
9	1900	100		4		4		4		4		4		4		4		4		4			
10	1901	100		4		4		4		4		4		4		4		4		4		4	
11																							
Etc.																							
20																							
	Total	1000		40		36		32		28		24		20		16		12		8		4	

Form 18.—Specification for Debenture Register.

GROSS DEBENTURE LIABILITY SCHEDULE.

To enable the treasurer to readily ascertain the total debenture indebtedness of the municipality at a glance, as it matures year by year, a schedule prepared after the specification exemplified in Form 19 will be found to be of inestimable convenience. The

Statement of Debenture Debt of Municipality of.....

With annual ammounts required to meet Coupons & Debentures

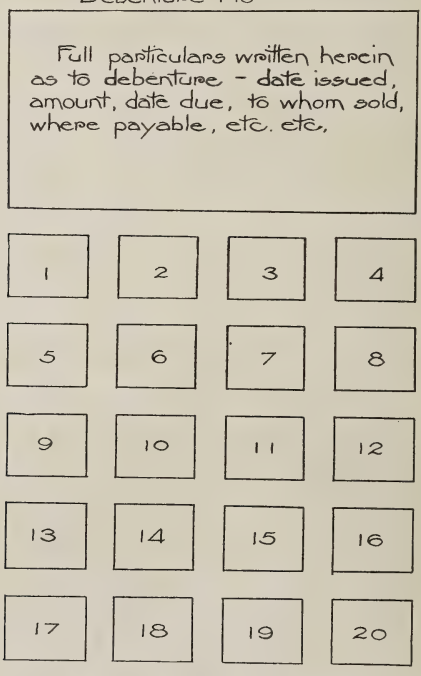
	1899		1900		1901		1902		1903		1904		1905		1906		1907		1908	
	Coupns	Deb	Coupns	Deb	Coupns	Deb	Coupns	Deb	Coupns	Deb	Coupns	Deb	Coupns	Deb	Coupns	Deb	Coupns	Deb	Coupons	Deb
By Law No 173 for $5000 passed July 1st 1899 payable in 5 yrs. Interest 6% per annum Coupons payable July 1 & Jan 1st	300 00	887 00	246 78	840 00	190 32	996 00	130 57	1057 00	67 20	1120 00										
By Law No 424 for $7200 passed Dec 1st 1899 payable in 5 yrs Interest 6% Coupons payable Jan 1st & July 1st			432 00	1277 06	353 00	334 00	274 00	1433 00	188 00	1521 00	97 00	1613 00								
By Law No 442 for $3600 passed Dec 15th 1899 payable in 5 yrs Interest 6% Coupons payable June 15 & Dec 15th			216 00	639 00	178 00	677 00	137 00	718 00	94 00	760 00	49 00	808 00								
By Law No 611 for $30000 passed Jan 1 1900 payable in 20 yrs Interest 5% Coupons payable July 1 & Jan 1st			1500 00	907 00	1454 50	953 00	1407 00	1000 00	1357 00	1050 00	1304 50	1103 00	1249 35	1158 00	1191 45	1216 00	1130 65	1277 00	1056 80	1341 00
	300 00	887 00	2393 78	3763 06																

Form 19.—Schedule Showing Gross Debenture Liability.

footings are carried in pencil, until the amounts have been raised and the debentures retired. As new issues occur the particulars are entered from time to time and the pencil footings are corrected.

CANCELLED DEBENTURE FILE.

The careful keeping of matured debentures is a matter of some importance, and one much neglected. A large book, similar to the ordinary invoice book used in the commercial world, and ruled after the manner of Form 20, arranged to accommodate twenty coupons, is about as convenient a method of keeping these as I have seen. As the coupons mature, and are paid and cancelled, they are pasted in the book upon the block corresponding to the



Form 20.—Filing Book for Cancelled Debentures and Coupons.

number (the highest number maturing first). At maturity, the page contains the coupons and the original debenture, all in order.

CHAPTER VI.

Passing Accounts.

WITH the exception of those payments which are authorized by by-law or by statutory enactment, all others should be passed upon and authorized by the council previous to payment. In cities and towns it is usual to pass the accounts first through the several committees having to do with the expenditure, being finally checked by the Finance Committee, and presented in their report to the full council, which sanctions payment.

Another method is to have all accounts first come before the council, where they are read in detail and referred by that body to the proper committee. This plan necessitates a longer wait before payment of the account can be had, but has the advantage of a publicity which is often wholesome.

In the case of minor corporations and township councils, where the meetings are held less frequently, accounts are usually received and disposed of at the same session.

All accounts should be certified to by an official of the corporation, the chairman of committee, or a member of the council, previous to presentation.

Accounts having been acted upon and payment authorized by the council, a warrant or order upon the treasurer is drawn and signed by the mayor, reeve, or clerk.

The usual form of warrant runs as follows:

No. .....

Sandwich, _____189

The Treasurer of the Municipal Corporation of Sandwich,

Please pay to_____or order,

the sum of_____dollars,

charging to _____Account

_____Mayor

Form 21.—Ordinary Warrant Form.

This warrant is handed to the person in whose favor it is made, and he presents it to the treasurer. That official generally takes up the warrant and cancels it, after issuing his cheque for the same amount and to the same order. This operation necessitates a duplication of work by the clerk and treasurer, and a multiplication of vouchers altogether unnecessary. The substitution of a form of warrant which also operates as a bank check

The Merchant's Bank will please pay and charge to Current Expenditure a/c ---------- Treasurer

No ---------

Sandwich ---------- 189

The Treasurer of the Municipal Corporation of Sandwich

Please pay to ---------- or order

the sum of ---------- Dollars

charging to ---------- Account

---------- Mayor

Form 22.—Combination Warrant and Cheque.

when countersigned by the treasurer does away with the double labor and provides a single but comprehensive voucher.

With this warrant in his hand the payee applies to the treasurer. The treasurer takes the warrant, enters it in his cash book, and, signing it in the place designated in the illustration, returns it to the person to whom payable and he proceeds to use the same as an ordinary check. If, by inadvertence, the treasurer omits to enter the amount and particulars of the warrant in his books, he is bound to discover the error and rectify it at the end of the month, when he proceeds to verify his cash and bank accounts

SHEET SYSTEM OF VOUCHER.

An excellent system and one which will prove labor-saving, as well as providing a means for the further multiplication of vouchers is the following, which may readily be adapted to the requirements of township and village corporations.

Upon a form as shown in 23, a list of all accounts passed should be entered, the accounts briefly numbered consecutively, the bill itself being given the same number. When the other business of the session has been completed, this list of accounts should be formally acted upon, by the passing of a resolution "that accounts numbered 30 to 37 be passed and that the reeve issue his order to the treasurer for payment of the same."

At the foot of the form, as will be seen, is an instruction to the treasurer to pay, which is made operative by the signatures of the reeve and clerk.

In writing up the minutes the clerk copies, in detail, the list of accounts, with their respective numbers, and he carefully files the original bills, which have all been properly endorsed with a number corresponding to that opposite the account in the list.

The original list is then transmitted to the treasurer, and he proceeds to pay.

Statement of Accounts passed by the Council of the Town of on 190

No	Name	For What	Acct Chgd	Amount	Signature of Recipient	C. B. Folio	Date of Payment	No. of Cheque

The Treasurer will please pay the above accounts numbered to inclusive

Reeve

Clerk

Form 23.—Sheet System of Voucher.

CHAPTER VII.

Municipal Banking.

EVERY dollar which goes through the hands of the treasurer should pass through the bank account. All monies should be paid only by bank cheque, and councils should make this compulsory. It is advisable to have two bank accounts, the principal one of which should be in a chartered bank. This should be in the name of the corporation or municipality, and cheques thereon to be signed by the head of the council and the treasurer. Into this account the tax collector should be required to pay all taxes.

The second account should be in the name of the treasurer of the municipality, as such, and all funds of the corporation would require to pass through this account, but not more than a stated amount should be allowed in the treasurer's account at one time. As the treasurer's account becomes depleted of funds, fresh amounts are transferred thereto from the account standing in the name of the municipality. The reeve or mayor of the council is thus enabled to keep close tab on the affairs of the municipality; and the security to be given by the treasurer need not be as large.

It will often be found convenient that the treasurer's account shall be kept in a centrally located private bank; and this is permissable with the consent of the council.

There is no objection to the treasurer's cashing his own cheques, to oblige a ratepayer, but the cheques so paid must be held as cash, and be deposited to the credit of his account at the first opportunity.

RECONCILIATION STATEMENT.

At the end of each month the treasurer should check his cash and bank accounts, and prepare a reconciliation statement.

A special book, ruled to three columns, should be kept for this purpose.

To illustrate the idea, examples are submitted.

At the end of January, when the treasurer receives his bank pass book, he finds that the bank reports more cash on hand than his own cash book shows. The official at once checks the accounts and finds that a number of cheques issued and charged by him have not been presented for payment previous to the close of the month. He then proceeds to reconcile the accounts as exhibited in Form 24.

1899				
Jan. 31.	Bank balance per Cash Book			$370 50
"	" " " Pass "		$573 33	
	Less O-S Cheques:			
	No. 230—Jones	$42 00		
	" 332—Smith	37 50		
	" 333—Thomson	70 00		
	" 375—Harum & Co	20 00		
	" 380—Fulton	33 33	202 83	370 50

Form 24.—Reconciliation Statement.

Upon receipt of the February account with cheques, the treasurer again checks up, and after clearing off the business of the month just closed, he finds that the bank has charged two or three items not in the current month's business. Without searching back through hundreds of stubs to ascertain what these items represent, he at once turns to his reconciliation account for the preceding month, and finds that of the outstanding cheques at the close of the month Nos. 330, 375 and 380 have been paid. Of the old cheques, Nos. 332 and 333 are still outstanding, and these are brought down to the next account, which will look as below:

The outstanding cheques of the longest duration also come first on the list, and thus a quick reference tab is kept upon them, and after a sufficient length of time has elapsed, duplicates may be issued, or steps taken to cancel the payment of the outstandings, as the circumstances may require.

1899				
Feb. 28	Bank balances per Cash Book			$783 75
	" " " Pass "		$992 37	
	Less O-S Cheques:			
	No. 332—Smith	$37 50		
	" 333—Thomson	70 00		
	" 396—Meeking	14 28		
	" 402—Somers	50 00		
	" 417—Mitchell	36 84	208 62	783 75

Form 25.—Reconciliation Statement No. 2.

The account may be kept in another way, by taking totals instead of balances, as the following formula shows. The result will be the same by either method, the first method being, to my mind, much the more practical.

1899				
Jan. 1	Bank balance per Cash Book	$137 50		
" 31	Deposits	1731 37	$1868 87	
" 31	Cheques, etc		1498 37	$370 50
" 31	Balance per Pass Book		$ 573 33	
	Less O-S Cheques:			
	No. 330—Jones	$42 00		
	" 332—Smith	37 50		
	" 342—Thomson	70 00		
	" 375—Forbes	20 00		
	" 380—Fulton	33 33	202 83	370 50

Form 26.—Another Form of Reconciliation Statement.

CHAPTER VIII.

Vouchers.

IT SEEMS almost unnecessary to say that every payment must be substantiated by voucher, upon which should be endorsed the authority under which payment is made. If it be not convenient to utilize the cheque numbers, then all vouchers would best be numbered consecutively, and the numbers should find a place against each item, irrespective of the number of books through which it may pass. Reference thereto is thus much facilitated. Although but few treasurers so regard it, yet it is of equal importance that good and sufficient vouchers shall be preserved in the case of receipts as well as of disbursements. Just here I may interject that it is surprising to find how little attention is paid by the rural auditor, and in many instances by the auditor of urban accounts as well, to checking the receipts as against their various sources. It seems to be taken for granted that there can be nothing wrong with the receipt side of the cash book, but the greatest care must be taken to see that the treasurer, in making disbursements, has not tampered with the funds of the rate-payers. In cases of default, experience goes to prove that the trouble most often arises from failure to charge, rather than from manipulation of the funds once they have been entered in the books of account.

In every municipality there should be an official form of receipt, and these should be numbered consecutively. For every dollar received on civic account an official receipt should be issued.

Every receipt in the book should be accounted for. In case of an error being made and a receipt cancelled, the spoiled form should not be destroyed, but should be securely attached to the stub or counterfoil of the receipt book, for the benefit of the auditors. The same remarks apply to cheques. Cheques from the corporation book should never be taken for other purposes, and every form should be accounted for. Explanations to the auditors are thus rendered unnecessary. The records contain their own explanations.

CHAPTER IX.

Striking the Rate.

IN MANY municipalities too little care is taken in the preparation of the estimates. It may be that although the whole requirements of the municipality are provided for, yet by looseness in the keeping of the records, the monies levied are not applied as was originally intended and authorized. Greater expenditures are made in some directions than are provided for in the estimates, and to meet this contingency, some other fund is made to suffer. Usually the sinking fund, if there happens to be one, is made the scapegoat. I call to mind a recent audit where in twelve years, although the sinking fund levy was placed in the estimates and was raised each year, yet in only eight of the years was the sum deposited to the credit of the fund. When the original estimates were asked for they were not forthcoming; had not been preserved after the by-law striking the rate had been passed. An analysis of the entire tax levy was thus necessitated. Had the estimates been filed, and the amounts levied in the tax roll been carried to the proper accounts in the ledger, such a laches could not well have occurred. I recommend that the statement showing the estimates, upon which the by-law striking the rate is based, should be incorporated in and made a part of such by-law, or, otherwise, that it should be copied in full in the minutes of the meeting of council at which passed.

The statement should show, first the sums required to meet the several fixed charges, or uncontrollable expenditures, and next the amounts which it has been estimated will be required for the carrying on of the municipal government. Against these should be placed first the anticipated revenue exclusive of the tax levy, and, second, the amount which must be raised by impost.

CHAPTER X.

Local Improvements.

WHEN a public work has been decided upon, the necessary statutory preliminaries having been observed, there are two methods which may be followed to provide funds for the carrying on of the work, (1) by issuing debentures and disposing of the same in bulk at the outset of the undertaking, or by partial sales as the necessities of the work require; or (2) by effecting temporary loans as the work progresses, charging capital or construction account with the interest of these loans, to be offset later on by the interest which will have accrued upon the debentures, if they are dated concurrently with the initiation of the work. Very often it is impossible to tell at the outset the extent of the expenditures which may be requisite upon a contemplated work. The architect or engineer will furnish an estimate, generally an outside figure, and upon this is based the amount for which the debentures are issued. It may be that when tenders are called for, much less than the sum estimated will be needed, and if so then the full issue of debentures will not be necessary. The method of providing the requisite funds by temporary loan would seem to be preferable, if only for this reason; but where the work under construction is of the nature of a "local improvement" (part to be paid by the municipality and part by the owners of the properties to be benefitted) there is an added reason for refraining from issuing the debentures till the completion of the work. In such case the construction of the improvement is in the nature of a partnership, and, properly, the greatest care should be taken to keep the transaction separate and free from other matters of a like nature, and from works in which only the corporation is interested. I use the word "properly" advisedly, for unfortunately the average municipal official is not careful in this regard and works are often undertaken and carried to completion, monies advanced, and debentures sold without the slightest regard being had to the equities of the various interests concerned.

I have been unable to find any method of procedure in undertakings of this kind better than the one I shall shortly outline. It certainly has the advantage of simplicity.

When the funds are required, arrangements are made for special advance from the bankers sufficient to meet the cost of the proposed undertaking, this advance to be carried in the way of an overdrawn account, guaranteed by a demand note, for the approximate requirement, if the bank rules require it. All cheques and payments made on account of that particular work, are entered to a special account, and interest is periodically charged upon the advances. When the work has been completed, and the actual cost arrived at, the time for the disposal of the debentures will have come, and these will then be issued to an amount exactly sufficient to cover the cost of the work.

SPECIAL ASSESSMENT REGISTER.

The methods of keeping the records of these local improvement assessments are almost as varied as are the classes of work done under this system.

City of Windsor

Register of Special Rates levied under the authority of

Total cost of Improvement $ Annual Payment $

Street	Lot	Feet Frontage	Name	C B Folio	Total Assessm't		Total Commuth		Years to Run	Annual Pay m't	

City of Windsor

By-Law No. Passed 190

City's Proportion $

Rate payers " $ Debentures issued under By-Law Passed

Record of Commutation paid or Folio entered in Collectors Roll of each year																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

Form 27.—Special Assessment Register.

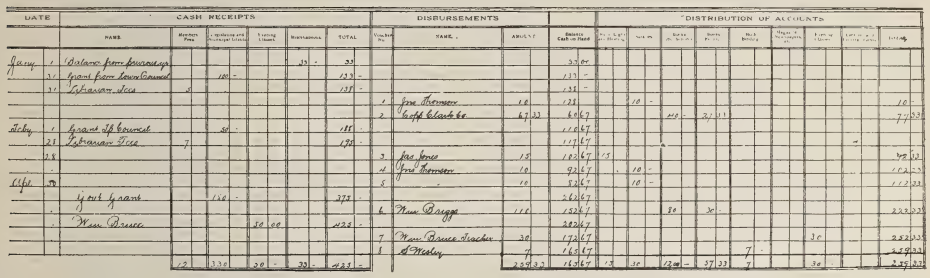
Where there are not more than a score of assessments which it is necessary to keep separate, an individual column for each work in the collector's roll is all that is necessary. Where the works exceed the number mentioned, then it becomes necessary to introduce a special assessment register. The form supplied here (27) is as complete and simple as any that can be devised. A page is given to each improvement; all the particulars as to the name of work, its nature, the total cost thereof, the number of levies, the years in which the collections are to be made, the number of the by-law under which constructed, the number of the consolidating by-law (if consolidated for the purpose of issuing debentures), the amount of premium received at sale of the bonds, the amount of each individual assessment; information as to commutations, all these are recorded in methodical fashion. A column is supplied for each individual year, and in this is entered opposite each name the pro-number, against which the amount has been placed in the general collector's roll. By a reference to the form given herewith it will be seen that a column has been provided for the principal items which enter into the local improvement system, as sewer tax, pavement tax, sidewalk tax, street sprinkling rate. In the upper left hand corner of the space for each entry in the collector's roll should be entered the folio of the special assessment register from which the charge has been taken.

CHAPTER XI.

Public Libraries.

THE FORM of accounts best suited to the use of libraries is presented below. The system is simple, yet absolutely complete. Within the one book is combined the ordinary cash book, journal and ledger. The fullest information concerning the accounts is available at a moment's notice; an easy method of proving the correctness of the clerical work is provided, and the whole business of the institution appears on the page containing the final entry. But few instructions are required to enable the average person, even though not skilled in book-keeping, to keep the accounts by this method.

The accompanying illustration, written up and worked out to an abstract, shows the manner of keeping the accounts of a public library, and is prepared in accordance with the requirements for the returns which must annually be made to the Minister of Education.



Form 28.—Public Library Records.

ABSTRACT.

Jan.	1.	Balance from previous year	$ 33 00
		Members' fees	12 00
April	30.	Leg. and Mun. grants	330 00
		Evening classes	50 00
			$425 00
		DISBURSEMENTS.	
April	30.	Rent, light, etc	$ 15 00
		Salaries	30 00
		Books (not fiction)	120 00
		Books (fiction)	57 33
		Binding	7 00
		Evening classes	30 00
			$259 33
		Balance on hand	165 67
			$425 00

All cash receipts are entered under their proper date and classification, and are carried to the "total" column and added in with each entry, so that the sum of the total column represents at all times the total amount of cash received. As these entries are made the amount in each case is added into the "balance cash on hand" column.

All disbursements are entered under proper date, and in the column headed "amount," after which the amount is deducted from the "balance cash on hand." The amount of the disbursement is then carried over to the "distribution of accounts," and is entered in the proper column or columns. This is, or these are, then carried to the "total" column, on the right hand side, and succeeding amounts are added in from time to time as the entries are made. The sum of these represents the total of the disbursements. To prove the correctness of the clerical work, add the "totals" of the distribution page to the "balance cash on hand," and the sum should (if no errors have been made) equal the total of the receipts.

In carrying over the accounts from page to page, the whole work must of necessity prove itself in a number of different ways. The sum of the footings of the receipts will

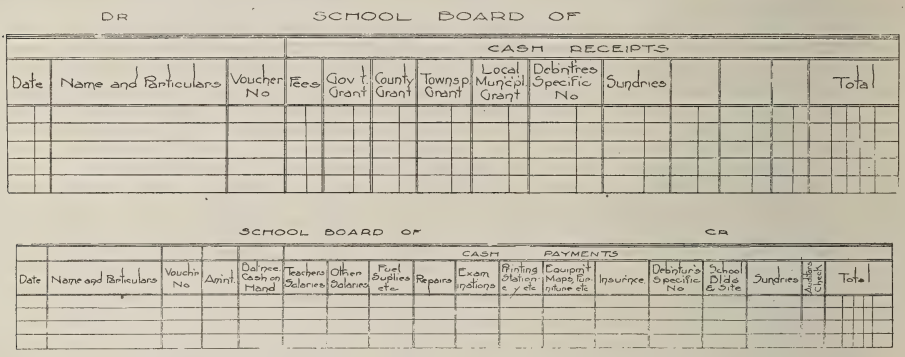
equal the "total;" the sum of the footings of the "distribution" page will equal the "total." The sum of the "totals" and the "balance cash on hand" must equal the "total receipts." These and other proofs which may be applied make it next to impossible to make a mistake, unless wilfully, in transferring the accounts from one page to the next.

Where greater elaboration of detail is wished, the number of columns can be increased, and the book made of the necessary width to accommodate them.

CHAPTER XII.

School Accounts.

IT IS as necessary that the accounts of the thousands of school sections throughout the land, should be properly and accurately kept, as with any other branch of public accounts. To this end what can be better than the adoption of a uniform system of accounts. In the form below will be found the principles of a simple, yet excellent system. It is along the same lines as the cash accounts for municipalities, and public libraries providing a positive and certain internal check. For details as to the keeping of this book, see chapter upon "Public Libraries." The principles in both cases are identical.



Form 29.—Public School Accounts.

CHAPTER XIII.

Debentures.

DEBENTURES and bonds are ordinarily issued upon either one of two methods: "Sinking Fund" and "Instalment or Annuity." Which of these methods is the better has been a moot question, and it depends altogether upon whether you are the purchaser or the seller of the securities which position you may feel disposed to take. For myself I have very decided views upon the subject, looking at it from the standpoint of the municipality.

SINKING FUND.

In the case of "sinking fund" debentures, no part of the principal is repaid to the holder or purchaser during the currency of the bonds. The full amount of interest and a portion of the principal is annually collected. The interest is paid to the debenture holder. The principal is paid into an account known as the sinking fund, which fund must be made to earn a rate of interest equal to that calculated at the time of issuing and this is compounded yearly or half yearly during the whole period of existence of the debt, so that at maturity of the debentures there will be in this fund just sufficient to repay the principal. With the rates of interest varying, it so happens that often it is not possible to make the

sinking fund earn the amount contemplated, or it may be that too high a rate of interest was allowed in the calculation.

Each year, before placing in the estimates the amount required to be raised for the sinking fund, a valuation should be made to ascertain whether the existing investments have amounted to the sum originally intended as that which should be on hand at that date. If deficient it must be augmented by adding the necessary amount to the ordinary yearly appropriation.

If precautions are taken, and fractional adjustments are made from year to year, there will be no possibility of finding the sinking fund short when the debentures mature.

A common practice is to calculate the interest earning power of the sinking fund at the same rate as the debentures bear, and this is a pit into which many municipalities stumble. There are many reasons why it is not possible to make the sinking fund earn interest equal to that which must be paid on the debentures, chief among which is lack of investment. The amounts being small and accumulating annually, it is impossible to keep the fund continually invested at a rate of interest higher than that which can be obtained by deposit in the ordinary savings bank. It follows that no matter what rate of interest it may be necessary to make the debentures bear, it is well that the sinking fund's interest-earning power should not be calculated at a rate higher than ordinary savings bank interest.

INSTALLMENT OR ANNUITY.

The "instalment" or "sliding scale" debentures are figured so that equal payments during the period which the debentures have to run of principal and interest, will be made. The first year's payment will obviously be largely interest and very little principal. The second, a little less interest and more principal. Each year the interest decreases and the principal increases, until in the final year the payment is mostly principal. It will be observed that the difference between the two forms of debenture is, that in the first case the investor accepts only the interest earned each year, leaving the principal in the hands of the municipality for reinvestment. In the second case the investor is himself under the necessity of finding his own source of reinvestment for the principal which he receives year by year.

The system of sinking funds originated because investors were averse to buying debentures which provided for the return yearly of a portion of the principal, necessitating the trouble of the reinvestment of small amounts. At any rate debentures of such a character brought a less price in the market, and hence the introduction of the sinking fund idea, which placed the onus of reinvestment upon the shoulders of the persons or corporations obtaining the loan, thus giving the capitalist the advantage of a longer and, to him, more satisfactory investment. This condition of affairs originated when rates of interest were much higher than now, and money less plentiful. The day of the sinking fund is past, however, the difference in the price obtainable for debentures of the two kinds being so slight that the trouble of maintaining the sinking fund largely exceeds the paltry difference in the proceeds of the sales. With a thorough sense of the responsibility, attaching to the position which I take, I have no hesitation in saying that the sinking fund is a curse to the average municipality. Lack of knowledge of finances, inability to keep the sinking fund profitably invested, the manipulation of the fund by designing and dishonest officials, ignorance in computing the earning power; these are principally the causes which lead to the conclusion voiced in the preceding sentence. In these days of cheap money, with capitalists on the alert for safe investments, and with the keen competition that exists in the money market, it makes but little difference which kind of debenture is issued, insofar as the sale of the securities is concerned. Indeed, however, as the following illustration will show, the issuing of sinking fund debentures is the more expensive method of providing funds: Let us take a loan of $25,000 for twenty years at 4 per cent. On the annuity plan the sum of $1,839.55 per annum will require to be raised for twenty years, to cover both principal and interest. On the sinking fund plan your annual interest payment will be $1,000.00, and for the sinking fund, calculated at 3%, $930.40, or $1,930.40 in all—

which is $90.85 in excess of your requirements under the annuity. This means, with interest, compounded, for twenty years, a direct loss to the rate-payers of over $2,500 00, or 10% of the entire loan. And even here we are pre-suposing the prompt deposit on the exact date, of the annual amount in the sinking fund, and that not one day of interest-earning power shall be lost, something which we know to be so rare as to be practically impossible in the average municipality.

THE RATE OF INTEREST.

Many municipalities are in the habit of issuing debentures bearing a higher rate of interest than the money can be obtained for. This, presumably, is done in order that a good premium may be obtained, the officials laboring under the misconception that the obtaining of a large premium gives the public a more exalted idea of the excellence of credit which the municipality enjoys in the financial world. A careful study of the money markets at the time the debentures are ripe for sale will enable the officials charged with that duty to decide pretty accurately upon the lowest rate of interest which the debentures may be made to bear, in order to find a purchaser at par. A low rate of interest and no premium is much preferable to a large premium with a corresponding increase in the interest rate. As a matter of fact investors often take advantage of the ignorance of officials not familiar with calculations of this character, and, under the cloak of an apparently large premium, they pay less for the debentures than if they had been compelled to bid on an issue bearing the current rate of interest and netting par.

THE QUESTION OF PREMIUMS.

There is also a greater evil than this in connection with the question of premiums. Many councils and officials are possessed of the mistaken idea that premiums of whatever sort are the common property of the municipality. The consequence is that in the case of local improvements, the general funds receive the benefit of the premium while the interested property owners pay the piper. It is obvious, therefore, that the obtaining of a premium is not always a benefit to those most immediately concerned. The natural application of any premium or surplus arising out of the sale of debentures issued on other than general account, is toward the payment of the first principal or interest which falls due on account of these particular debentures, a pro-rata reduction being made in the assessments against the various property holders for that particular year.

SINKING FUND INVESTMENTS.

The statute authorizes municipalities to invest the sinking funds in government securities, municipal debentures, their own or their neighbors, and first mortgages, at the pleasure of the investing body. The fullest information should be kept of all such investments, and a ledger should be provided, which will furnish all the facts. It matters not particularly what the form, if information be given as to date of loan, amount. description of property, certificate of valuation, and of solicitor, and such other details as the circumstances surrounding each particular case, and the nature of the investment, may seem to require.

CHAPTER XIV.

Tabular Computations.

IN EVERY municipal corporation public works are undertaken requiring the issuing of debentures or bonds to provide the necessary funds for the carrying out of the works. It becomes of the greatest importance, therefore, that the officials charged with the issuing of these securities should be possessed of the information to enable them to quickly and correctly make the necessary calculations as to the annual amounts to be levied.

SINKING FUND TABLES.

In the Sinking Fund Table herewith is shown the amount of sinking fund necessary to be set aside annually to provide the required amount to any rate of interest from 2 to 6 per cent. for any number of years, at the end of which debentures are ordinarily made payable. Purchasers of debentures are, by recourse to this table, enabled to ascertain at a glance whether proper provision has been made in the by-law, under which the bonds or debentures have been issued, for the necessary amount of sinking fund.

INSTALMENT OR ANNUITY TABLES.

By far the greater part of the debentures issued at the present time are upon the instalment or annuity plan. In this way an equal annual payment is made. It is thus necessary to know what amount of principal must be paid off in each year, in order that the principal so paid, together with the interest, shall each year amount to the same sum. The tables which are presented in this volume are prepared to show the exact amount of interest and principal respectively, payable each year, in order to reduce to an equal annual sum the amount to be levied. To financiers generally, and to municipal clerks and engineers especially these tables will prove of inestimable value, enabling them to make the necessary calculations required in the issuing of debentures or bonds, in any sum, for periods of 5, 10, 15, 20, 25 and 30 years, at rates of interest of 2, 2½, 3, 3½, 4, 4½, 5, 5½ and 6 per cent.

Special tables have been prepared for 2, 3 and 4 years, at rates of interest of 2, 2½, 3, 3½, 4, 4½, 5, 5½ and 6 per cent. These will be found useful more particularly in the case of school sections, where short term debentures are frequently issued.

COMPOUND INTEREST TABLE.

(One dollar interest.)

Included in the list of tabular computations is a table which shows readily the sum to which One dollar principal will increase at compound interest in any number of years from 1 to 40, at rates of 2, 2½, 3, 3½, 4, 4½, 5, 5½ and 6 per cent. per annum. Instructions for the finding of the sum to which any given amount will increase at compound interest at any of the rates of interest, and number of years expressed in the table, are also given.

COMPOUND INTEREST TABLE.

(One dollar deposited at end of each year.)

It frequently becomes a necessity to ascertain whether or not a sinking fund is being maintained at its proper standard. To do this in the ordinary course means a deal of figuring. By the use of the table appended the proper status of the fund at the end of any year may be obtained by a simple sum in multiplication as exemplified at foot of this table.

PROOF OF ANNUITY PAYMENTS.

Purchasers of bonds and debentures invariably require to satisfy themselves of the correctness of the sum provided in the by-laws as being required to be raised annually to meet the interest and principal of the debentures for which they are negotiating. The table on page 37 furnishes a simple means to this end; and it may furthermore be used to prove the correctness of his calculations by the clerk or financier issuing the bonds or debentures.

TABLE TO SHOW THE INTEREST-EARNING POWER OF STOCKS, BONDS AND DEBENTURES BOUGHT AT VARYING PRICES, EITHER ABOVE OR BELOW PAR.

In these days of close competition in the money markets of the world, the purchaser of securities is called upon at almost every turn to bid for bonds, stocks and debentures. The table on page 38 will enable such to tell at a glance the interest which investments will net, at varying purchase prices either at a discount or a premium, ranging from 50 to 150. The rule for ascertaining the value at any rate not included in the table is also given.

These tables are printed from plates revised by the author, so that there need be no question as to their correctness.

Debenture Instalment Tables.

Showing amount of Principal to be paid each year in order to reduce to an equal sum the amount to be levied each year for payment of Principal and Interest on an issue of $1,000,000.

2 Per Cent.—5 Years.

Debentures bearing 2 per cent. Interest, Payable in 5 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $212,158.41.

Each Year.	Interest.	Principal.
1	$20000 00	$192158 41
2	16156 83	196001 58
3	12236 80	199921 61
4	8238 36	203920 05
5	4160 06	207998 35
		$1000000 00

2 Per Cent.—10 Years.

Debentures bearing 2 per cent. Interest, Payable in 10 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $111,326.54.

Each Year.	Interest.	Principal.
1	$20000 00	$ 91326 54
2	18173 49	93153 05
3	16310 43	95016 11
4	14410 10	96916 44
5	12471 78	98854 76
6	10494 68	100831 86
7	8478 04	102848 50
8	6421 07	104905 47
9	4322 96	107003 58
10	2182 85	109143 69
		$1000000 00

2 Per Cent.—15 Years.

Debentures bearing 2 per cent. Interest, Payable in 15 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $77,825.47.

Each Year.	Interest.	Principal.
1	$20000 00	$57825 47
2	18843 49	58981 98
3	17663 85	60161 62
4	16460 61	61364 86
5	15233 32	62592 15
6	13981 48	63843 99
7	12704 60	65120 87
8	11402 18	66423 29
9	10073 71	67751 76
10	8718 68	69106 79
11	7336 54	70488 93
12	5926 76	71898 71
13	4488 79	73336 68
14	3022 06	74803 41
15	1525 98	76299 49
		$1000000 00

2 Per Cent.—20 Years.

Debentures bearing 2 per cent. Interest, Payable in 20 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $61,156.72.

Each Year.	Interest.	Principal.
1	$20000 00	$41156 72
2	19176 86	41979 86
3	18337 27	42819 45
4	17480 98	43675 74
5	16607 36	44549 36
6	15716 38	45440 34
7	14807 57	46349 15
8	13880 59	47276 13
9	12935 06	48221 66
10	11970 63	49186 09
11	10986 91	50169 81
12	9983 51	51173 21
13	8960 05	52196 67
14	7916 12	53240 60
15	6851 31	54305 41
16	5765 20	55391 52
17	4657 37	56499 35
18	3527 38	57629 34
19	2374 79	58781 93
20	1199 06	59957 66
		$1000000 00

By giving the figures for an issue of $1000,000, exact amounts are exhibited. For amounts less than a million it is only necessary to take the same proportion of the above sums thus :

$10,000 requires exactly one-hundreth of above figures, viz. : For 10 years at 2 per cent :

1st Payment—Interest, $200.00; Principal, $913.26 ; total, $1113.26.

10th Payment—Interest, $21.83; Principal, $1091.43; total, $1113.26.

2 Per Cent.—25 Years

Debentures bearing 2 per cent. Interest, Payable in 25 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $51,220.44.

Each Year.	Interest.	Principal.
1	$20000 00	$31220 44
2	19375 59	31844 85
3	18738 69	32481 75
4	18089 06	33131 38
5	17426 43	33794 01
6	16750 54	34469 90
7	16061 15	35159 29
8	15357 96	35862 48
9	14640 71	36579 73
10	13909 12	37311 32
11	13162 90	38057 54
12	12401 74	38818 70
13	11625 37	39595 07
14	10833 47	40386 97
15	10025 73	41194 71
16	9201 84	42018 60
17	8361 46	42858 98
18	7504 28	43716 16
19	6629 96	44590 48
20	5738 15	45482 29
21	4828 50	46391 94
22	3900 67	47319 77
23	2954 27	48266 17
24	1988 95	49231 49
25	1004 46	50215 98
		$1000000 00

2 1-2 Per Cent.—25 Years.

Debentures bearing 2½ per cent. Interest, Payable in 25 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $54,275.93.

Each Year.	Interest.	Principal.
1	$25000 00	$29275 93
2	24268 10	30007 83
3	23517 90	30758 03
4	22748 95	31526 98
5	21960 78	32315 15
6	21152 90	33123 03
7	20324 82	33951 11
8	19476 04	34799 89
9	18606 05	35669 88
10	17714 30	36561 63
11	16800 26	37475 67
12	15863 37	38412 56
13	14903 05	39372 88
14	13918 73	40357 20
15	12909 80	41366 13
16	11875 65	42400 28
17	10815 64	43460 29
18	9729 13	44546 80
19	8615 46	45660 47
20	7473 95	46801 98
21	6303 90	47972 03
22	5104 60	49171 33
23	3875 32	50400 61
24	2615 30	51660 63
25	1324 25	52951 68
		$1000000 00

2 Per Cent.—30 Years

Debentures bearing 2 per cent. Interest, Payable in 30 Yearly Instalments.

EQUAL ANNUAL PAYMENT. $44,649.93

Each Year.	Interest.	Principal.
1	$20000 00	$24649 93
2	19507 00	25142 93
3	19004 14	25645 79
4	18491 23	26158 70
5	17968 05	26681 88
6	17434 41	27215 52
7	16890 10	27759 83
8	16334 91	28315 02
9	15768 61	28881 32
10	15190 98	29458 95
11	14601 80	30048 13
12	14000 84	30649 09
13	13387 86	31262 07
14	12762 62	31887 31
15	12124 87	32525 06
16	11474 37	33175 56
17	10810 86	33839 07
18	10134 07	34515 86
19	9443 76	35206 17
20	8739 64	35910 29
21	8021 43	36628 50
22	7288 86	37361 07
23	6541 64	38108 29
24	5779 47	38870 46
25	5002 06	39647 87
26	4209 11	40440 82
27	3400 29	41249 64
28	2575 30	42074 63
29	1733 80	42916 13
30	875 82	43774 11
		$1000000 00

2 1-2 Per Cent. 20 Years.

Debentures bearing 2½ per cent. Interest, Payable in 20 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $64,147.13

Each Year.	Interest.	Principal.
1	$25000 00	$39147 13
2	24021 32	40125 81
3	23018 18	41128 95
4	21989 95	42157 18
5	20936 02	43211 11
6	19855 75	44291 38
7	18748 46	45398 67
8	17613 49	46533 64
9	16450 15	47696 98
10	15257 73	48889 40
11	14035 49	50111 64
12	12782 70	51364 43
13	11498 59	52648 54
14	10182 38	53964 75
15	8833 26	55313 87
16	7450 41	56696 72
17	6032 99	58114 14
18	4580 14	59566 99
19	3090 96	61056 17
20	1564 63	62582 50
		$1000000 00

2 1-2 Per Cent.—5 Years.

Debentures bearing 2½ per cent. Interest, Payable in 5 Yearly Instalments.

EQUAL ANNUAL PAYMENT. $215,246.88.

Each Year.	Interest.	Principal.
1	$25000 00	$190246 88
2	20243 83	195003 05
3	15368 75	199878 13
4	10371 80	204875 08
5	5250 02	209996 86
		$1000000 00

2 1-2 Per Cent.—10 Years.

Debentures bearing 2½ per cent. Interest, Payable in 10 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $114,258.78.

Each Year.	Interest.	Principal.
1	$25000 00	$89258 78
2	22768 53	91490 25
3	20481 27	93777 51
4	18136 84	96121 94
5	15733 79	98524 99
6	13270 66	100988 12
7	10745 96	103512 82
8	8158 14	106100 64
9	5505 62	108753 16
10	2786 99	111471 79
		$1000000 00

2 1-2 Per Cent.—15 Years.

Debentures bearing 2½ per cent. Interest, Payable in 15 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $80,766.45.

Each Year.	Interest.	Principal.
1	$25000 00	$55766 45
2	23605 84	57160 61
3	22176 82	58589 63
4	20712 08	60054 37
5	19210 72	61555 73
6	17671 83	63094 62
7	16094 46	64671 99
8	14477 66	66288 79
9	12820 45	67946 00
10	11121 80	69644 65
11	9380 68	71385 77
12	7596 03	73170 42
13	5766 77	74999 68
14	3891 78	76874 67
15	1969 83	78796 62
		$1000000 00

2 1-2 Per Cent.—30 Years.

Debentures bearing 2½ per cent. Interest, Payable in 30 Yearly Instalments.

EQUAL ANNUAL PAYMENT. $47,777.65.

Each Year.	Interest.	Principal.
1	$25000 00	$22777 65
2	24430 56	23347 09
3	23846 88	23930 77
4	23248 61	24529 04
5	22635 37	25142 28
6	22006 83	25770 82
7	21362 56	26415 09
8	20702 18	27075 47
9	20025 29	27752 36
10	19331 49	28446 16
11	18620 33	29157 32
12	17891 40	29886 25
13	17144 24	30633 41
14	16378 41	31399 24
15	15593 43	32184 22
16	14788 82	32988 83
17	13964 10	33813 55
18	13110 76	34658 89
19	12252 29	35525 36
20	11364 16	36413 49
21	10453 82	37323 83
22	9520 72	38256 93
23	8564 30	39213 35
24	7583 96	40193 69
25	6579 12	41198 53
26	5549 16	42228 49
27	4493 45	43284 20
28	3411 34	44366 31
29	2302 18	45475 47
30	1165 74	46611 91
		$1000000 00

3 Per Cent.—20 Years.

Debentures bearing 3 per cent. Interest, Payable in 20 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $67,215.71

Each Year.	Interest.	Principal.
1	$30000 00	$37215 71
2	28883 53	38332 18
3	27733 56	39482 15
4	26549 10	40666 61
5	25329 10	41886 61
6	24072 50	43143 21
7	22778 20	44437 51
8	21445 08	45770 63
9	20071 96	47143 75
10	18657 64	48558 07
11	17200 90	50014 81
12	15700 46	51515 25
13	14155 00	53060 71
14	12563 18	54652 53
15	10923 60	56292 11
16	9234 84	57980 87
17	7495 41	59720 30
18	5703 80	61511 91
19	3858 45	63357 26
20	1957 89	65257 82
		$1000000 00

3 Per Cent.—5 Years.

Debentures bearing 3 per cent. Interest, Payable in 5 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $218,354.58.

Each Year.	Interest.	Principal.
1	$30000 00	$188354 58
2	24349 36	194005 22
3	18529 20	199825 38
4	12534 44	205820 14
5	6359 90	211994 68
		$1000000 00

3 Per Cent.—10 Years.

Debentures bearing 3 per cent. Interest, Payable in 10 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $117,230.51.

Each Year.	Interest.	Principal.
1	$30000 00	$87230 51
2	27383 08	89847 43
3	24687 66	92542 85
4	21911 38	95319 13
5	19051 80	98178 71
6	16106 44	101124 07
7	13072 72	104157 79
8	9947 98	107282 53
9	6729 51	110501 00
10	3414 53	113815 98
		$1000000 00

3 Per Cent.—15 Years.

Debentures bearing 3 per cent. Interest, Payable in 15 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $83,766.58

Each Year.	Interest.	Principal.
1	$30000 00	$53766 58
2	28387 00	55379 58
3	26725 61	57040 97
4	25014 39	58752 19
5	23251 82	60514 76
6	21436 38	62330 20
7	19566 47	64200 11
8	17640 47	66126 11
9	15656 68	68109 90
10	13613 39	70153 19
11	11508 79	72257 79
12	9341 06	74425 52
13	7108 29	76658 29
14	4808 54	78958 04
15	2439 81	81326 77
		$1000000 00

3 Per Cent.—30 Years

Debentures bearing 3 per cent. Interest, Payable in 30 Yearly Instalments.

EQUAL ANNUAL PAYMENT. $51 019,26.

Each Year.	Interest.	Principal.
1	$30000 00	$21019 26
2	29369 42	21649 84
3	28719 92	22299 34
4	28050 94	22968 32
5	27361 89	23657 37
6	26652 17	24367 09
7	25921 16	25098 10
8	25168 22	25851 04
9	24392 68	26626 58
10	23593 89	27425 37
11	22771 13	28248 13
12	21923 68	29095 58
13	21050 81	29968 45
14	20151 76	30867 50
15	19225 74	31793 52
16	18271 93	32747 33
17	17289 51	33729 75
18	16277 62	34741 64
19	15235 37	35783 89
20	14161 86	36857 40
21	13056 14	37963 12
22	11917 24	39102 02
23	10744 18	40275 08
24	9535 93	41483 33
25	8291 43	42727 83
26	7009 57	44009 67
27	5689 30	45329 96
28	4329 40	46689 86
29	2928 71	48090 55
30	1486 18	49533 08
		$1000000 00

3 1-2 Per Cent.—20 Years.

Debentures bearing 3½ per cent. Interest, Payable in 20 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $70,361.08

Each Year.	Interest.	Principal.
1	$35000 00	$35361 08
2	33762 36	36598 72
3	32481 41	37879 67
4	31155 62	39205 46
5	29783 43	40577 65
6	28363 21	41997 87
7	26893 28	43467 80
8	25371 91	44989 17
9	23797 29	46563 79
10	22167 56	48193 52
11	20480 78	49880 30
12	18734 97	51626 11
13	16928 06	53433 02
14	15057 90	55303 18
15	13122 29	57238 79
16	11118 94	59242 14
17	9045 46	61315 62
18	6899 41	63461 67
19	4678 26	65682 82
20	2379 46	67981 62
		$1000000 00

3 Per Cent.—25 Years.

Debentures bearing 3 per cent. Interest, Payable in 25 Yearly Instalments.

EQUAL ANNUAL PAYMENT. $57,427.88.

Each Year.	Interest.	Principal.
1	$30000 00	$27427 88
2	26177 16	28250 72
3	28329 64	29098 24
4	27456 69	29971 19
5	26557 55	30870 33
6	25631 44	31796 44
7	24677 55	32750 33
8	23695 04	33732 84
9	22683 06	34744 82
10	21640 71	35787 17
11	20567 10	36860 78
12	19461 27	37966 61
13	18322 27	39105 61
14	17149 11	40278 77
15	15940 74	41487 14
16	14696 13	42731 75
17	13414 18	44013 70
18	12093 77	45334 11
19	10733 74	46694 14
20	9332 92	48094 96
21	7890 07	49537 81
22	6403 93	51023 95
23	4873 22	52554 66
24	3296 58	54131 30
25	1673 13	55754 75
		$1000000 00

3 1-2 Per Cent.—25 Years.

Debentures bearing 3½ per cent. Interest, Payable in 25 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $60,674.04

Each Year.	Interest.	Principal.
1	$35000 00	$25674 04
2	34101 41	26572 63
3	33171 37	27502 67
4	32208 77	28465 27
5	31212 49	29461 55
6	30181 33	30492 71
7	29114 09	31559 95
8	28009 49	32664 55
9	26866 23	33807 81
10	25682 96	34991 08
11	24458 26	36215 78
12	23190 72	37483 32
13	21878 80	38795 24
14	20520 97	40153 07
15	19115 61	41558 43
16	17661 07	43012 97
17	16155 61	44518 43
18	14597 47	46076 57
19	12984 79	47689 25
20	11315 66	49358 38
21	9588 12	51085 92
22	7800 11	52873 93
23	5949 53	54724 51
24	4034 17	56639 87
25	2051 97	58622 07
		$1000000 00

3 1-2 Per Cent.—5 Years.

Debentures bearing 3½ per cent. Interest, Payable in 5 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $221,481.38

Each Year.	Interest.	Principal.
1	$35000 00	$186481 38
2	28473 15	193008 23
3	21717 86	199763 52
4	14726 14	206755 24
5	7489 75	213991 63
		$1000000 00

3 1-2 Per Cent.—10 Years.

Debentures bearing 3½ per cent. Interest, Payable in 10 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $120,241.37.

Each Year.	Interest.	Principal.
1	$35000 00	$85241 37
2	32016 55	88224 82
3	28928 68	91312 69
4	25732 74	94508 63
5	22424 94	97816 43
6	19001 36	101240 01
7	15457 96	104783 41
8	11790 54	108450 83
9	7994 76	112246 61
10	4066 17	116175 20
		$1000000 00

3 1-2 Per Cent.—15 Years.

Debentures bearing 3½ per cent. Interest, Payable in 15 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $86,825.08

Each Year.	Interest.	Principal.
1	$35000 00	$51825 08
2	33186 12	53638 96
3	31308 76	55516 32
4	29365 68	57459 40
5	27354 61	59470 47
6	25273 14	61551 94
7	23118 82	63706 26
8	20889 11	65935 97
9	18581 35	68243 73
10	16192 82	70632 26
11	13720 69	73104 39
12	11162 03	75663 05
13	8513 83	78311 25
14	5772 93	81052 15
15	2936 31	83888 77
		$1000000 00

3 1-2 Per Cent.—30 Years

Debentures bearing 3½ per cent. Interest, Payable in 30 Yearly Instalments.

EQUAL ANNUAL PAYMENT. $54 371,34

Each Year.	Interest.	Principal.
1	$35000 00	$19371 34
2	34322 00	20049 34
3	33620 28	20751 06
4	32893 99	21477 35
5	32142 28	22229 06
6	31364 26	23007 08
7	30559 02	23812 32
8	29725 59	24645 75
9	28862 98	25508 36
10	27970 19	26401 15
11	27046 15	27325 19
12	26089 77	28281 57
13	25099 91	29271 43
14	24075 41	30295 93
15	23015 05	31356 29
16	21917 58	32453 76
17	20781 70	33589 64
18	19606 06	34765 28
19	18389 28	35982 06
20	17129 91	37241 43
21	15826 46	38544 88
22	14477 39	39893 95
23	13081 10	41290 24
24	11635 95	42735 39
25	10140 20	44231 14
26	8592 11	45779 23
27	6989 84	47381 50
28	5331 48	49039 86
29	3615 09	50756 25
30	1839 17	52532 17
		$1000000 00

4 Per Cent.—20 Years.

Debentures bearing 4 per cent. Interest, Payable in 20 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $73,581.75.

Each Year.	Interest.	Principal.
1	$40000 00	$33581 75
2	38656 73	34925 02
3	37259 73	36322 02
4	35806 85	37774 90
5	34295 85	39285 90
6	32724 41	40857 34
7	31090 11	42491 64
8	29390 45	44191 30
9	27622 81	45958 94
10	25784 45	47797 30
11	23872 56	49709 19
12	21884 19	51697 66
13	19816 29	53765 46
14	17665 67	55916 08
15	15429 03	58152 72
16	13102 92	60478 83
17	10683 77	62897 98
18	8167 85	65413 91
19	5551 29	68030 47
20	2830 07	70751 69
		$1000000 00

4 Per Cent.—5 Years

Debentures bearing 4 per cent. Interest, Payable in 5 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $224,627.11.

Each Year.	Interest.	Principal.
1	$40000 00	$184627 11
2	32614 92	192012 19
3	24934 42	199692 69
4	16946 71	207680 40
5	8639 50	215987 61
		$1000000 00

4 Per Cent.—10 Years.

Debentures bearing 4 per cent. Interest, Payable in 10 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $123,290.95.

Each Year.	Interest.	Principal.
1	$40000 00	$83290 95
2	36668 37	86622 58
3	33203 46	90087 49
4	29599 96	93690 99
5	25852 33	97438 62
6	21954 78	101336 17
7	17901 33	105389 62
8	13685 75	109605 20
9	9301 54	113989 40
10	4741 96	118548 98
		$1000000 00

4 Per Cent.—15 Years

Debentures bearing 4 per cent. Interest, Payable in 15 Yearly Instalments.

EQUAL ANNUAL PAYMENT. $89,941.10

Each Year.	Interest.	Principal.
1	$40000 00	$49941 10
2	38002 36	51938 74
3	35924 81	54016 30
4	33764 16	56176 94
5	31517 08	58424 03
6	29180 12	60760 98
7	26749 68	63191 43
8	24222 02	65719 08
9	21593 26	68347 85
10	18859 34	71081 76
11	16016 07	73925 03
12	13059 07	76882 03
13	9983 79	79957 31
14	6785 50	83155 60
15	3459 28	86481 82
		$1000000 00

4 Per Cent. 25 Years.

Debentures bearing 4 per cent. Interest, Payable in 25 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $64,011.96.

Each Year.	Interest.	Principal.
1	$40000 00	$24011 96
2	39039 52	24972 44
3	38040 62	25971 34
4	37001 77	27010 19
5	35921 36	28090 60
6	34797 74	29214 22
7	33629 17	30382 79
8	32413 86	31598 10
9	31149 94	32862 02
10	29835 46	34176 50
11	28468 40	35543 56
12	27046 66	36965 30
13	25568 05	38443 91
14	24030 29	39981 67
15	22431 01	41580 96
16	20767 77	43244 20
17	19038 01	44973 96
18	17239 05	46772 92
19	15368 13	48643 84
20	13422 38	50589 59
21	11398 79	52613 18
22	9294 27	54717 70
23	7105 56	56906 41
24	4829 30	59182 67
25	2462 00	61549 97
		$1000000 00

4 1-2 Per Cent.—25 Years.

Debentures bearing 4½ per cent. Interest, Payable in 25 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $67,439.03.

Each Year.	Interest.	Principal.
1	$45000 00	$22439 03
2	43990 25	23448 78
3	42935 05	24503 98
4	41832 37	25606 66
5	40680 07	26758 96
6	39475 92	27963 11
7	38217 58	29221 45
8	36902 61	30536 42
9	35528 47	31910 56
10	34092 50	33346 53
11	32591 91	34847 12
12	31023 78	36415 25
13	29385 10	38053 93
14	27672 67	39766 36
15	25883 19	41555 84
16	24013 17	43425 86
17	22059 01	45380 02
18	20016 91	47422 12
19	17882 91	49556 12
20	15652 89	51786 14
21	13322 51	54116 52
22	10887 27	56551 76
23	8342 44	59096 59
24	5683 09	61755 94
25	2904 08	64534 95
		$1000000 00

4 Per Cent.—30 Years.

Debentures bearing 4 per cent. Interest, Payable in 30 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $57,830 10.

Each Year.	Interest.	Principal.
1	$40000 00	$1783010
2	39286 80	1854330
3	38545 07	1928503
4	37773 66	2005644
5	36971 41	2085869
6	36137 06	2169304
7	35269 34	22560 76
8	34366 90	23463 20
9	33428 38	24401 72
10	32452 31	25377 79
11	31437 20	26392 90
12	30381 48	27448 62
13	29283 54	28546 56
14	28141 67	29688 43
15	26954 14	30875 96
16	25719 10	32111 00
17	24434 66	33395 44
18	23098 84	34731 26
19	21709 59	36120 51
20	20264 77	37565 33
21	18762 16	39067 94
22	17199 44	40630 66
23	15574 21	42255 89
24	13883 98	43946 12
25	12126 13	45703 97
26	10297 97	47532 13
27	8396 69	49433 41
28	6419 35	51410 75
29	4362 92	53467 18
30	2224 23	55605 87
		$1000000 00

4 1-2 Per Cent.—20 Years.

Debentures bearing 4½ per cent. Interest, Payable in 20 Yearly Instalments.

EQUAL ANNUAL PAYMENT. $76,876.15.

Each Year.	Interest.	Principal.
1	$45000 00	$31876 15
2	43565 58	33310 57
3	42066 60	34809 55
4	40500 17	36375 98
5	38863 26	38012 89
6	37152 68	39723 47
7	35365 12	41511 03
8	33497 12	43379 03
9	31545 07	45331 08
10	29505 17	47370 98
11	27373 47	49502 68
12	25145 85	51730 30
13	22817 99	54058 16
14	20385 37	56490 78
15	17843 29	59032 86
16	15186 81	61689 34
17	12410 79	64465 36
18	9509 84	67366 31
19	6478 36	70397 79
20	3310 46	73565 69
		$1000000 00

4 1-2 Per Cent.—5 Years.

Debentures bearing 4½ per cent. Interest, Payable in 5 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $227,791.64.

Each Year.	Interest.	Principal.
1	$45000 00	$182791 64
2	36774 38	191017 26
3	28178 60	199613 04
4	19196 01	208595 63
5	9809 21	217982 43
		$1000000 00

4 1-2 Per Cent.—10 Years.

Debentures bearing 4½ per cent. Interest, Payable in 10 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $126,378.83.

Each Year.	Interest.	Principal.
1	$45000 00	$81378 83
2	41337 95	85040 87
3	37511 11	88867 71
4	33512 07	92866 75
5	29333 06	97045 76
6	24966 00	101412 82
7	20402 43	105976 39
8	15633 49	110745 33
9	10649 95	115728 87
10	5442 15	120936 67
		$1000000 00

4 1-2 Per Cent.—15 Years.

Debentures bearing 4½ per cent. Interest, Payable in 15 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $93,113.81.

Each Year.	Interest.	Principal.
1	$45000 00	$48113 81
2	42834 88	50278 93
3	40572 33	52541 48
4	38207 96	54905 85
5	35737 20	57376 61
6	33155 25	59958 56
7	30457 12	62656 69
8	27637 56	65476 25
9	24691 13	68422 68
10	21612 11	71501 70
11	18394 54	74719 27
12	15032 17	78081 64
13	11518 50	81595 31
14	7846 71	85267 10
15	4009 69	89104 12
		$1000000 00

4 1-2 Per Cent.—30 Years.

Debentures bearing 4½ per cent. Interest, Payable in 30 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $61,391.55.

Each Year.	Interest.	Principal.
1	$45000 00	$16391 55
2	44262 39	17129 16
3	43491 57	17899 98
4	42686 07	18705 48
5	41844 33	19547 22
6	40964 71	20426 84
7	40045 50	21346 05
8	39084 93	22306 62
9	38081 13	23310 42
10	37032 16	24359 39
11	35935 99	25455 56
12	34790 49	26601 06
13	33593 44	27798 11
14	32342 52	29049 03
15	31035 32	30356 23
16	29669 29	31722 26
17	28241 78	33149 77
18	26750 04	34641 51
19	25191 18	36200 37
20	23562 16	37829 39
21	21859 83	39531 72
22	20080 91	41310 64
23	18221 93	43169 62
24	16279 30	45112 25
25	14249 24	47142 31
26	12127 84	49263 71
27	9910 97	51480 58
28	7594 35	53797 20
29	5173 47	56218 08
30	2643 66	58747 89
		$1000000 00

5 Per Cent.—20 Years.

Debentures bearing 5 per cent. Interest, Payable in 20 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $80,242.59.

Each Year.	Interest.	Principal.
1	$50000 00	$30242 59
2	48487 87	31754 72
3	46900 14	33342 45
4	45233 02	35009 57
5	43482 54	36760 05
6	41644 53	38598 06
7	39714 63	40527 96
8	37688 23	42554 36
9	35560 52	44682 07
10	33326 41	46916 18
11	30980 60	49261 99
12	28517 50	51725 09
13	25931 25	54311 34
14	23215 68	57026 91
15	20364 34	59878 25
16	17370 42	62872 17
17	14226 81	66015 78
18	10926 03	69316 56
19	7460 20	72782 39
20	3821 08	76421 51
		$1000000 00

5 Per Cent.—5 Years.

Debentures bearing 5 per cent. Interest, payable in 5 Yearly Instalments.

EQUAL ANNUAL PAYMENT. $230,974.80.

Each Year.	Interest.	Principal.
1	$50000 00	$180974 80
2	40951 26	190023 54
3	31450 09	199524 71
4	21473 85	209500 95
5	10998 80	219476 00
		$1000000 00

5 Per Cent.—10 Years.

Debentures bearing 5 per cent. Interest, Payable in 10 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $129,504.58.

Each Year.	Interest.	Principal.
1	$50000 00	$79504 58
2	46024 77	83479 81
3	41850 78	87653 80
4	37468 09	92036 49
5	32866 27	96638 31
6	28034 35	101470 22
7	22960 84	106543 73
8	17633 65	111870 92
9	12040 11	117464 46
10	6166 89	123337 68
		$1000000 00

5 Per Cent.—15 Years.

Debentures bearing 5 per cent. Interest, Payable in 15 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $96,342.29.

Each Year.	Interest.	Principal.
1	$50000 00	$46342 29
2	47682 89	48659 40
3	45249 92	51092 37
4	42695 30	53646 99
5	40012 95	56329 34
6	37196 48	59145 81
7	34239 19	62103 10
8	31134 04	65208 25
9	27873 63	68468 66
10	24450 19	71892 10
11	20855 59	75486 70
12	17081 25	79261 04
13	13118 20	83224 09
14	8956 99	87385 30
15	4587 73	91754 56
		$1000000 00

5 Per Cent.—25 Years.

Debentures bearing 5 per cent. Interest, Payable in 25 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $70,952.46.

Each Year.	Interest.	Principal.
1	$50000 00	$20952 46
2	48952 38	22000 08
3	47852 38	23100 08
4	46697 37	24255 09
5	45484 62	25467 84
6	44211 23	26741 23
7	42874 16	28078 30
8	41470 25	29482 21
9	39996 14	30956 32
10	38448 32	32504 14
11	36823 11	34129 35
12	35116 65	35835 81
13	33324 86	37627 60
14	31443 98	39508 98
15	29468 03	41484 43
16	27393 81	43558 65
17	25215 87	45736 59
18	22929 04	48023 42
19	20527 87	50424 59
20	18006 64	52945 82
21	15359 35	55593 11
22	12579 70	58372 76
23	9661 06	61291 40
24	6596 49	64355 97
25	3378 69	67573 77
		$1000000 00

5 1-2 Per Cent.—25 Years.

Debentures bearing 5½ per cent. Interest, Payable in 25 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $74,549.36.

Each Year.	Interest.	Principal.
1	$55000 00	$19549 36
2	53924 79	20624 57
3	52790 44	21758 92
4	51593 70	22955 66
5	50331 14	24218 22
6	48999 14	25550 22
7	47593 87	26955 49
8	46111 32	28438 04
9	44547 23	30002 13
10	42897 11	31652 25
11	41156 24	33393 12
12	39319 62	35229 74
13	37381 98	37167 38
14	35337 78	39211 58
15	33181 14	41368 22
16	30905 89	43643 47
17	28505 50	46043 86
18	25973 08	48576 28
19	23301 39	51247 97
20	20482 75	54066 61
21	17509 09	57040 26
22	14371 87	60177 48
23	11062 11	63487 24
24	7570 31	66979 04
25	3886 46	70662 89
		$1000000 00

5 Per Cent.—30 Years.

Debentures bearing 5 per cent. Interest, Payable in 30 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $65,051.44.

Each Year.	Interest.	Principal.
1	$50000 00	$15051 44
2	49247 43	15804 01
3	48457 23	16594 21
4	47627 52	17423 92
5	46756 33	18295 11
6	45841 57	19209 87
7	44881 08	20170 36
8	43872 56	21178 88
9	42813 61	22237 83
10	41701 72	23349 72
11	40534 24	24517 20
12	39308 38	25743 06
13	38021 22	27030 22
14	36669 72	28381 72
15	35250 63	29800 81
16	33760 59	31290 85
17	32196 05	32855 39
18	30553 28	34498 16
19	28828 37	36223 07
20	27017 21	38034 23
21	25115 50	39935 94
22	23118 71	41932 73
23	21022 07	44029 37
24	18820 60	46230 84
25	16509 06	48542 38
26	14081 94	50969 50
27	11533 46	53517 98
28	8857 56	56193 88
29	6047 87	59003 57
30	3097 69	61953 75
		$1000000 00

5 1-2 Per Cent.—20 Years

Debentures bearing 5½ per cent. Interest, Payable in 20 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $83,679.33.

Each Year.	Interest.	Principal.
1	$55000 00	$28679 33
2	53422 64	30256 69
3	51758 52	31920 81
4	50002 87	33676 46
5	48150 67	35528 66
6	46196 59	37482 74
7	44135 04	39544 29
8	41960 11	41719 22
9	39665 55	44013 78
10	37244 79	46434 54
11	34690 89	48988 44
12	31996 53	51682 80
13	29153 97	54525 36
14	26155 08	57524 25
15	22991 25	60688 08
16	19653 40	64025 93
17	16131 97	67547 36
18	12416 87	71262 46
19	8497 43	75181 90
20	4362 43	79316 90
		$1000000 00

5 1-2 Per Cent.—5 Years.

Debentures bearing 5½ per cent. Interest, Payable in 5 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $234,176.44.

Each Year.	Interest.	Principal.
1	$55000 00	$179176 44
2	45145 30	189031 14
3	34748 59	199427 85
4	23780 06	210396 38
5	12208 25	221968 19
		$1000000 00

5 1-2 Per Cent.—10 Years.

Debentures bearing 5½ per cent. Interest, Payable in 10 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $132,667.77.

Each Year.	Interest.	Principal.
1	$55000 00	$77667 77
2	50728 28	81939 49
3	46221 60	86446 17
4	41467 06	91200 71
5	36451 02	96216 75
6	31159 10	101508 67
7	25576 13	107091 64
8	19686 09	112981 68
9	13472 09	119195 68
10	6916 33	125751 44
		$1000000 00

5 1-2 Per Cent.—15 Years.

Debentures bearing 5½ per cent. Interest, Payable in 15 Yearly Instalments.

EQUAL ANNUAL PAYMENT, $99.625.60.

Each Year.	Interest.	Principal.
1	$55000 00	$44625 60
2	52545 60	47080 00
3	49956 19	49669 41
4	47224 38	52401 22
5	44342 31	55283 29
6	41301 73	58323 87
7	38093 92	61531 68
8	34709 67	64915 93
9	31139 30	68486 30
10	27372 55	72253 05
11	23398 63	76226 97
12	19206 15	80419 45
13	14783 08	84842 52
14	10116 74	89508 86
15	5193 75	94431 85
		$1000000 00

5 1-2 Per Cent.—30 Years

Debentures bearing 5½ per cent. Interest, Payable in 30 Yearly Instalments.

EQUAL ANNUAL PAYMENT.
$68,805.39

Each Year.	Interest.	Principal.
1	$55000 00	$13805 39
2	54240 70	14564 69
3	53439 65	15365 74
4	52594 53	16210 86
5	51702 93	17102 46
6	50762 30	18043 09
7	49769 93	19035 46
8	48722 98	20082 41
9	47618 44	21186 95
10	46453 16	22352 23
11	45223 79	23581 60
12	43926 80	24878 59
13	42558 48	26246 91
14	41114 90	27690 49
15	39591 92	29213 47
16	37985 18	30820 21
17	36290 07	32515 32
18	34501 73	34303 66
19	32615 03	36190 36
20	30624 56	38180 83
21	28524 61	40280 78
22	26309 17	42496 22
23	23971 88	44833 51
24	21506 03	47299 36
25	18904 57	49900 82
26	16160 02	52645 37
27	13264 53	55540 86
28	10209 78	58595 61
29	6987 02	61818 37
30	3587 01	65218 38
		$1000000 00

6 Per Cent.—20 Years.

Debentures bearing 6 per cent. Interest, Payable in 20 Yearly Instalments.

EQUAL ANNUAL PAYMENT,
$87,184 56.

Each Year.	Interest.	Principal.
1	$60000 00	$27184 56
2	58368 93	28815 63
3	56639 99	30544 57
4	54807 32	32377 24
5	52864 68	34319 88
6	50805 49	36379 07
7	48622 75	38561 81
8	46309 04	40875 52
9	43856 51	43328 05
10	41256 82	45927 74
11	38501 16	48683 40
12	35580 15	51604 41
13	32483 89	54700 67
14	29201 85	57982 71
15	25722 89	61461 67
16	22035 19	65149 37
17	18126 22	69058 34
18	13982 72	73201 84
19	9590 62	77593 94
20	4934 98	82249 58
		$1000000 00

6 Per Cent.—5 Years.

Debentures bearing 6 per cent Interest, payable in 5 Yearly Instalments.

EQUAL ANNUAL PAYMENT.
$237,396.40.

Each Year.	Interest.	Principal.
1	$60000 00	$177396 40
2	49356 22	188040 18
3	38073 80	199322 60
4	26114 45	211281 95
5	13437 53	223958 87
		$1000000 00

6 Per Cent.—10 Years.

Debentures bearing 6 per cent. Interest, Payable in 10 Yearly Instalments.

EQUAL ANNUAL PAYMENT.
$135,867.96.

Each Year.	Interest.	Principal.
1	$60000 00	$75867 96
2	55447 93	80420 03
3	50622 72	85245 24
4	45508 01	90359 95
5	40086 41	95781 55
6	34339 52	101528 44
7	28247 81	107620 15
8	21790 60	114077 36
9	14945 96	120922 00
10	7690 64	128177 32
		$1000000 00

6 Per Cent.—15 Years.

Debentures bearing 6 per cent. Interest, Payable in 15 Yearly Instalments.

EQUAL ANNUAL PAYMENT,
$102,962.77.

Each Year.	Interest.	Principal.
1	$60000 00	$42962 77
2	57422 24	45540 53
3	54689 81	48272 96
4	51793 43	51169 34
5	48723 27	54239 50
6	45468 90	57493 87
7	42019 27	60943 50
8	38362 66	64600 11
9	34486 65	68476 12
10	30378 08	72584 69
11	26023 00	76939 77
12	21406 62	81556 15
13	16513 25	86449 52
14	11326 28	91636 49
15	5828 09	97134 68
		$1000000 00

6 Per Cent.—25 Years.

Debentures bearing 6 per cent. Interest, Payable in 25 Yearly Instalments.

EQUAL ANNUAL PAYMENT,
$78,226.72.

Each Year.	Interest.	Principal.
1	$60000 00	$18226 72
2	58906 40	19320 32
3	57747 18	20479 54
4	56518 41	21708 31
5	55215 91	23010 81
6	53835 26	24391 46
7	52371 77	25854 95
8	50820 48	27406 24
9	49176 10	29050 62
10	47433 06	30793 66
11	45585 44	32641 28
12	43626 97	34599 75
13	41550 98	36675 74
14	39350 44	38876 28
15	37017 86	41208 86
16	34545 33	43681 39
17	31924 45	46302 27
18	29146 31	49080 41
19	26201 48	52025 24
20	23079 97	55146 75
21	19771 16	58455 56
22	16263 83	61962 89
23	12546 06	65680 66
24	8605 22	69621 50
25	4427 93	73798 79
		$1000000 00

6 Per Cent.—30 Years.

Debentures bearing 6 per cent. Interest, Payable in 30 Yearly Instalments.

EQUAL ANNUAL PAYMENT,
$72,648.91.

Each Year.	Interest.	Principal.
1	$60000 00	$12648 91
2	59241 07	13407 84
3	58436 60	14212 31
4	57583 86	15065 05
5	56679 96	15968 95
6	55721 82	16927 09
7	54706 20	17942 71
8	53629 63	19019 29
9	52488 48	20160 44
10	51278 85	21370 07
11	49996 65	22652 27
12	48637 51	24011 41
13	47196 82	25452 10
14	45669 70	26979 22
15	44050 94	28597 98
16	42335 07	30313 85
17	40516 23	32132 69
18	38588 27	34060 65
19	36544 64	36104 28
20	34378 38	38270 54
21	32082 15	40566 77
22	29648 14	43000 78
23	27068 09	45580 83
24	24333 24	48315 68
25	21434 30	51214 62
26	18361 42	54287 50
27	15104 17	57544 75
28	11651 49	60997 43
29	7991 64	64657 28
30	4112 21	68536 71
		$1000000 00

PROOF OF ANNUITY PAYMENTS.

To ascertain the amount of annual instalment or levy for repayment of a loan of any amount with yearly interest as given hereunder.

Years.		2 per Cent.	2½ per Cent.	3 per Cent.
5	Divide amount of Loan by	4.7134	4.6458	4.5799
10	" "	8.9826	8.7526	8.5302
15	" "	12.8492	12.3814	11.9379
20	" "	16.3514	15.5892	14.8775
25	" "	19.5235	18.4244	17.4131
30	" "	22.3965	20.9303	19.6004

Years.		3½ per Cent.	4 per Cent.	4½ per Cent.
5	Divide amount of Loan by	4.5150	4.4518	4.3899
10	" "	8.3166	8.1108	7.9127
15	" "	11.5174	11.1184	10.7396
20	" "	14.2124	13.5903	13.0080
25	" "	16.4815	15.6221	14.8282
30	" "	18.3920	17.2920	16.2889

Years.		5 per Cent.	5½ per Cent.	6 per Cent.
5	Divide amount of Loan by	4.3251	4.2703	4.2123
10	" "	7.7217	7.5376	7.3601
15	" "	10.3796	10.0376	9.7122
20	" "	12.4622	11.9504	11.4699
25	" "	14.0939	13.4139	12.7833
30	" "	15.3724	14.5338	13.7648

Purchasers of debentures and bonds always require to satisfy themselves that the annual payment upon the debentures which they are buying has been correctly calculated. The above table furnishes a quick and certain check as to this. Example: Debentures for $10,000 at 4 per cent, 20 years, requires an equal annual payment of $735.82. To prove this by the table given: $10,000 ÷ 13.5903 = 735.81\frac{8}{10}$.

TABLE

SHOWING THE ANNUAL INTEREST TO BE REALIZED FROM

Stocks, Bonds and Debentures

Bearing the interest given along the top, when purchased at the rate in the first or "price" column. Example: Stock paying annually 5 per cent if purchased at a 102 will net 4.90 per cent on the investment.

Price.	3 per Cent.	3½ per Cent.	4 per Cent.	4½ per Cent.	5 per Cent.	6 per Cent.	7 per Cent.
50	6.00	7.00	8.00	9.00	10.00	12.00	14.00
55	5.45	6.36	7.27	8.20	9.09	10.90	12.72
60	5.00	5.83	6.66	7.50	8.33	10.00	11.66
65	4.61	5.38	6.15	7.00	7.69	9.23	10.76
70	4.28	5.00	5.71	6.43	7.14	8.57	10.00
75	4.00	4.67	5.33	6.00	6.66	8.00	9.33
80	3.75	4.37	5.00	5.62	6.25	7.50	8.75
85	3.52	4.12	4.70	5.29	5.88	7.05	8.23
90	3.33	3.88	4.44	5.00	5.55	6.66	7.77
95	3.15	3 68	4.21	4.73	5.26	6.31	7.36
96	3.13	3.64	4.16	4.69	5.21	6.25	7.29
97	3.09	3.61	4.12	4.64	5.15	6.19	7.21
98	3.06	3.57	4.08	4.59	5.10	6.12	7.14
99	3.03	3.54	4.04	4.54	5.05	6.06	7.07
100	3.00	3.50	4.00	4.50	5.00	6.00	7.00
101	2.97	3.46	3.96	4.45	4.95	5.94	6.93
102	2.94	3.43	3.92	4.41	4.90	5.88	6.86
103	2.91	3.40	3.88	4.36	4.85	5.82	6.79
104	2.89	3.36	3.84	4.32	4.80	5.77	6.73
105	2.86	3.33	3.81	4.28	4.76	5.71	6.66
110	2.73	3.20	3.63	4.10	4.54	5.45	6.36
115	2.60	3.00	3.47	3.91	4.35	5.21	6.08
120	2.50	2.92	3.33	3.75	4.16	5.00	5.83
125	——	2.80	3.20	3.60	4.00	4.80	5.60
130	——	2.70	3.08	3.46	3.84	4.61	5.38
135	——	2.65	2.95	3.33	3.70	4.44	5.18
140	——	——	2.85	3.21	3.57	4.28	5.00
145	——	——	2 76	3.10	3.45	4.13	4.82
150	——	——	2.66	3.00	3.33	4.00	4.66

Rule to find the value at any rate not included in this table: Multiply the rate per cent the stock is bearing by 100 and divide by the price you wish to pay. The result will give the interest the investment will realize; or, divide by the rate of interest you wish the investment to realize, and the result will give the price to be paid for the stock.

Illustration: Stock bearing 4 per cent is wanted to realize 5 per cent: $4 \times 100 = 400 \div 5 = 80$, the price at which you must buy to realize 5 per cent; or stock bearing 6 per cent is purchased at 105, what will it realize: $6 \times 100 = 600 \div 105 = 5.70$ per cent.

COMPOUND INTEREST TABLE.

COMPOUND INTEREST TABLE, ONE DOLLAR PRINCIPAL.—The sum to which one dollar principal will increase, at compound interest, in any number of years, not exceeding forty, at 2, 2½, 3, 3½, 4, 4½, 5, 5½ and 6 per cent per annum.

Years.	2 per Cent.	2½ per Cent.	3 per Cent.	3½ per Cent.	4 per Cent.	4½ per Cent.	5 per Cent.	5½ per Cent.	6 per Cent.
1	1.020	1.025	1.030	1.035	1.040	1.045	1.050	1.055	1.060
2	1.040	1.051	1.061	1.071	1.082	1.092	1.103	1.113	1.124
3	1.061	1.077	1.093	1.109	1.125	1.141	1.158	1.174	1.191
4	1.082	1.104	1.126	1.147	1.170	1.193	1.216	1.239	1.262
5	1.104	1.131	1.159	1.188	1.217	1.246	1.276	1.307	1.338
6	1.126	1.160	1.194	1.229	1.266	1.302	1.340	1.379	1.419
7	1.148	1.189	1.230	1.272	1.316	1.361	1.407	1.455	1.504
8	1.171	1.218	1.267	1.317	1.369	1.422	1.477	1.535	1.594
9	1.195	1.249	1.305	1.363	1.423	1.486	1.551	1.619	1.689
10	1.219	1.280	1.344	1.411	1.480	1.553	1.629	1.708	1.791
11	1.243	1.312	1.384	1.460	1.539	1.623	1.710	1.802	1.898
12	1.268	1.345	1.426	1.511	1.601	1.696	1.796	1.901	2.012
13	1.293	1.378	1.469	1.564	1.665	1.772	1.886	2.006	2.133
14	1.319	1.413	1.513	1.619	1.732	1.852	1.980	2.116	2.261
15	1.345	1.448	1.558	1.675	1 802	1.935	2.079	2.232	2.397
16	1.372	1.484	1.605	1.734	1.874	2.022	2.183	2.355	2.540
17	1.400	1.521	1.653	1.795	1.949	2.113	2.292	2.485	2.693
18	1.428	1.560	1.703	1.858	2.027	2.208	2.407	2.621	2.854
19	1.456	1.599	1.754	1.923	2.118	2.308	2.527	2.766	3.026
20	1.485	1.638	1.806	1.990	2.192	2.412	2.653	2 918	3.207
21	1.515	1.679	1.860	2.060	2.280	2.520	2.786	3.078	3.400
22	1.546	1.721	1.916	2.132	2.371	2.634	2.925	3.248	3.604
23	1.576	1.764	1.974	2.206	2.466	2.752	3.072	3.426	3.820
24	1.608	1.809	2.033	2.284	2.565	2.876	3.225	3.615	4.049
25	1.640	1.853	2.094	2.363	2.667	3.005	3.386	3.813	4.292
26	1.673	1.900	2.157	2.446	2.774	3.141	3.556	4.023	4.549
27	1.706	1.948	2 221	2.532	2.885	3.282	3.733	4.244	4.822
28	1.741	1.996	2.288	2.620	3.000	3.430	3.920	4.478	5.112
29	1.775	2.046	2.357	2.712	3.120	3.584	4.116	4.724	5.418
30	1.811	2.097	2.428	2.807	3.245	3.745	4.322	4.984	5.743
31	1.847	2.150	2.500	2.905	3.375	3.914	4.538	5.258	6.088
32	1.884	2.204	2.575	3.006	3.510	4.090	4.765	5.547	6.453
33	1 922	2.259	2.652	3.111	3.650	4.274	5.003	5.852	6.841
34	1.960	2.315	2.732	3.221	3.796	4.466	5.253	6.174	7.251
35	1.999	2.373	2.814	3.333	3.948	4.667	5.516	6.514	7.686
36	2.039	2.433	2.898	3.450	4.106	4.877	5.792	6.872	8.147
37	2.080	2.493	2.985	3.571	4.270	5.097	6.081	7.250	8.636
38	2.122	2.556	3.075	3.696	4.441	5.326	6.385	7.649	9.154
39	2.164	2.620	3.167	3.825	4.619	5.566	6.705	8.069	9.704
40	2.207	2.685	3.262	3.960	4.803	5.816	7.040	8.513	10.286

To find the sum to which a given amount will increase at compound interest, at any of the rates per cent and number of years expressed in the above table:

Multiply the given amount by the sum to which one dollar will increase at the rate and for the number of years required, marking off as many decimals from the product as there are decimals in the multiplier and multiplicand.

SINKING FUND INVESTMENT TABLE.

COMPOUND INTEREST TABLE—$1.00 per annum, deposited at end of year. This table gives the sum to which one dollar per annum, paid at the end of each year, will increase at compound interest, in any number of years up to forty, at 2, 2½, 3, 3½, 4, 4½, 5, 5½ and 6 per cent per annum.

Years.	2 per Cent.	2½ per Cent.	3 per Cent.	3½ per Cent.	4 per Cent.	4½ per Cent.	5 per Cent.	5½ per Cent.	6 per Cent
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.020	2.025	2.030	2.035	2.040	2.045	2.050	2 055	2.060
3	3.060	3.076	3.091	3.106	3.122	3.137	3.153	3.108	3.184
4	4.122	4.153	4.184	4.215	4.246	4.278	4.310	4.342	4.375
5	5.204	5.256	5.309	5.362	5.416	5.471	5.526	5.581	5.637
6	6 308	6.388	6.468	6.550	6.633	6.717	6.802	6.888	6.975
7	7.434	7.547	7 662	7.779	7.898	8.019	8.142	8.267	8.394
8	8.583	8.736	8.892	9.052	9.214	9.380	9.549	9.722	9.897
9	9.755	9.955	10.159	10.368	10.583	10.802	11.027	11.256	11.491
10	10.949	11.203	11.464	11.731	12.006	12.288	12.578	12.875	13.181
11	12.168	12.483	12 808	13.142	13 486	13.841	14.207	14.583	14.972
12	13.412	13.796	14.192	14.602	15.026	15.464	15.917	16.385	16.870
13	14.680	15.140	15.618	16.113	16.627	17.160	17.713	18.287	18.882
14	15.973	16.519	17.086	17.677	18.292	18.932	19.599	20.292	21.015
15	17.293	17 932	18.598	19.296	20.024	20.784	21.579	22.409	23.276
16	18.639	19.380	20.157	20.971	21.825	22.719	23.657	24.641	25.673
17	20.012	20.864	21.762	22.705	23.698	24.742	25.840	26.996	28.213
18	21.412	22.386	23.414	24.499	25.645	26.855	28.132	29.481	30.906
19	22.840	23.946	25.117	26.357	27.671	29.064	30.539	32.103	33.760
20	24.297	25.545	26.870	28.279	29.778	31.371	33.066	34.868	36.786
21	25.783	27.183	28.676	30.269	31.969	33.783	35.719	37.786	39.993
22	27.299	28.863	30.537	32.329	34.248	36.303	38.505	40.864	43.392
23	28.845	30.584	32.453	34.460	36.618	38.937	41.430	44.112	46.996
24	30.422	32.349	34.426	36.666	39.083	41.689	44.502	47.538	50.816
25	32.030	34.158	36.459	38.950	41.646	44.565	47.727	51.153	54.865
26	33.671	36.012	38.553	41.313	44.312	47.571	51 113	54.966	59.156
27	35.344	37.912	40.709	43.759	47.084	50.711	54.669	58.989	63.706
28	37.051	39.860	42.931	46.290	49.968	53.993	58.403	63.233	68.528
29	38.792	41.856	45.219	48.911	52.966	57.423	62.323	67.711	73.640
30	40.568	43.902	47.575	51.622	56.085	61.007	66.439	72.435	79.058
31	42.379	46.000	50.003	54.429	59.328	64.752	70.761	77.419	84.802
32	44.227	48.150	50.503	57.334	62.701	68.666	75.299	82.677	90.890
33	46.111	50.354	55.078	60.341	66.210	72.756	80.064	88.225	96.343
34	48.034	52.613	57.730	63.453	69.858	77.030	85.067	94.077	104.184
35	49.994	54.928	60.462	66.674	73.652	81.497	90.320	100.251	111.435
36	51.994	57.301	63.276	70.007	77.598	86.164	95.836	106.765	119.121
37	54.084	59.734	66.174	73.458	81.702	91.041	101.628	113.637	127.268
38	56.115	67.222	69.159	77.029	85.970	96.138	107.709	120.887	135.904
39	58.237	63.478	72.234	80.725	90.409	101.464	114.095	128.536	145.058
40	60.402	63.740	75.401	84.550	95.026	107.030	120.800	136.606	154.762

To ascertain the amount which should be in a sinking fund at any given time, multiply the annual deposit by the amount which $1.00 earns in the time required at the rate per cent as found in the above table.

Example: Required to find amount which should be in a sinking fund (maturing in 20 years) at the end of the tenth year; annual deposit $250, at 3 per cent. One dollar for ten years at 3 per cent produces $11,464, and this multiplied by $250 = $2866.00, the amount which will be in the fund if it has been maintained at its proper standard.

SINKING FUND TABLE.

Amounts to be set aside and invested yearly, for the following number of years respectively, at any rate of interest from 2 to 6 per cent, in order to produce ($1,000,000) one million dollars. ☞INTEREST EARNED PAYABLE YEARLY.

Number of Years.	RATE OF INTEREST.																			
	2		2¼		2½		2¾		3		3¼		3½		3¾		4			
	$	c	$	c	$	c	$	c	$	c	$	c	$	c	$	c	$	c		
5	192158	41	191200	21	190246	88	189298	22	188354	58	187415	60	186481	38	185551	89	184627	12		
6	158526	00	157534	90	156549	90	155570	84	154597	50	153629	97	152668	21	151712	20	150761	91		
7	134512	18	133500	30	132495	70	131497	46	130506	36	129522	04	128544	50	127573	70	126609	62		
8	116509	79	115484	65	114467	30	113457	93	112456	39	111462	63	110476	65	109498	40	108527	84		
9	102515	43	101481	75	100456	88	99440	95	98433	86	97435	55	96446	01	95465	17	94493	00		
10	91326	54	90287	67	89258	78	88239	76	87230	51	86231	07	85241	37	84261	35	83290	95		
15	57825	47	56788	53	55766	45	54759	18	53766	58	52788	58	51825	08	50875	95	49941	10		
20	41156	72	40142	08	39147	13	38171	73	37215	71	36278	88	35361	08	34462	10	33581	75		
25	31220	44	30235	99	29275	93	28339	98	27427	88	26539	33	25674	04	24831	70	24011	97		
30	24649	93	23699	35	22777	65	21884	42	21019	26	20181	72	19371	34	18587	63	17830	10		
40	16555	75	15677	38	14836	24	14031	52	13262	38	12527	94	11827	29	11159	46	10523	49		
50	11823	22	11018	36	10258	06	9540	92	8865	49	8230	28	7633	71	7074	22	6550	20		
60	8767	97	8035	33	7353	40	6720	02	6132	96	5589	94	5088	63	4626	70	4201	85		
70	6667	92	6004	58	5397	12	4842	19	4336	63	3877	27	3460	96	3084	57	2745	07		
75	5855	09	5225	55	4653	59	4135	61	3667	97	3247	03	2869	20	2530	98	2229	01		
80	5160	71	4563	77	4026	05	3543	43	3111	75	2726	91	2384	89	2081	85	1814	08		
90	4406	02	3511	26	3038	09	2621	25	2255	56	1936	01	1657	82	1416	46	1207	76		
100	3202	75	2725	94	2311	89	1954	18	1646	67	1383	51	1159	27	968	95	808	00		
	4¼		4½		4¾		5		5¼		5½		5¾		6					
	$	c	$	c	$	c	$	c	$	c	$	c	$	c	$	c				
5	183707	03	182791	64	181880	90	180974	80	180073	32	179176	44	178284	14	177396	40				
6	149817	31	148878	39	147945	11	147017	47	146095	42	145178	95	144268	03	143362	63				
7	125652	21	124701	47	123757	35	122819	82	121888	85	120964	42	120046	49	119135	02				
8	107564	93	106609	66	105661	96	104721	82	103789	18	102864	01	101946	28	101035	95				
9	93529	44	92574	48	91628	03	90690	08	89760	57	88839	46	87926	70	87022	24				
10	82330	12	81378	83	80436	99	79504	58	78581	52	77667	77	76763	27	75867	96				
15	49020	43	48113	81	47221	14	46342	29	45477	15	44625	60	43787	52	42962	77				
20	32719	84	31876	15	31050	47	30242	59	29452	28	28679	33	27923	50	27184	56				
25	23214	53	22439	03	21685	13	20952	46	20240	66	19549	35	18878	17	18226	72				
30	17098	25	16391	55	15709	46	15051	44	14416	94	13805	39	13216	24	12648	92				
40	9918	39	9343	15	8796	75	8278	16	7786	37	7320	35	6879	07	6461	54				
50	6060	05	5602	15	5174	90	4776	74	4406	09	4061	45	3741	33	3444	29				
60	3811	78	3454	26	3127	10	2828	19	2555	50	2307	07	2081	07	1875	73				
70	2439	52	2165	12	1919	17	1699	16	1502	69	1327	55	1171	67	1033	13				
75	1960	05	1721	04	1509	13	1321	61	1156	01	1010	03	881	55	768	67				
80	1578	12	1370	70	1188	80	1029	63	890	63	769	49	664	09	572	55				
90	1027	83	873	16	740	55	627	12	530	32	447	89	377	82	318	37				
100	672	36	558	40	462	92	383	14	316	64	261	32	215	41	177	36				

Explanatory: For amounts less than a million, the proportion of the above figures will give the required sum. Thus, for $20,000, payable in 20 years, the interest on the sinking fund assumed to be 3 per cent, take $37215.71 as that required for $1,000,000, and dividing by 100 we get $372.15¾ for $10,000, which multiplied by 2=$744.31½, the amount required for $20,000. In other words, the annual sinking fund given in the above table, multiplied by the amount of the debentures and divided by 1,000,000, gives the sinking fund required.

Attention is again called to the fact that it is unsafe to calculate on the sinking fund earning more than Savings Bank interest.

2 Per Cent.—2 Years.
EQUAL ANNUAL PAYMENT,
$515,049.51.

Each Year.	Interest.	Principal.
1	$20000 00	$ 495049 51
2	10099 02	504950 49
		$1000000 00

2 Per Cent.—3 Years.
EQUAL ANNUAL PAYMENT,
$346,754.68

Each Year.	Interest.	Principal.
1	$20000 00	$ 326754 68
2	13464 90	333289 78
3	6799 14	339955 54
		$1000000 00

2 Per Cent.—4 Years.
EQUAL ANNUAL PAYMENT,
$262,623.64.

Each Year	Interest.	Principal.
1	$20000 00	$ 242623 64
2	15147 52	247476 12
3	10198 00	252425 64
4	5149 04	257474 60
		$1000000 00

2 1-2 Per Cent.—2 Years.
EQUAL ANNUAL PAYMENT,
$518,827.16.

Each Year.	Interest.	Principal.
1	$25000 00	$ 493827 16
2	12654 32	506172 84
		$1000000 00

2 1-2 Per Cent.—3 Years.
EQUAL ANNUAL PAYMENT,
$350,136.63.

Each Year.	Interest.	Principal.
1	$25000 00	$ 325136 63
2	16871 58	333265 05
3	8538 31	341598 32
		$1000000 00

2 1-2 Per Cent—4 Years.
EQUAL ANNUAL PAYMENT,
$265,817.62.

Each Year.	Interest.	Principal.
1	$25000 00	$ 240817 62
2	18979 56	246838 06
3	12808 60	253009 02
4	6482 32	259335 30
		$1000000 00

3 Per Cent.—2 Years.
EQUAL ANNUAL PAYMENT,
$522,610.84.

Each Year.	Interest.	Principal.
1	$30000 00	$ 492610 84
2	15221 68	507389 16
		$1000000 00

3 Per Cent.—3 Years.
EQUAL ANNUAL PAYMENT,
$353,530.36.

Each Year.	Interest.	Principal.
1	$30000 00	$ 323530 36
2	20294 08	333236 28
3	10297 00	343233 36
		$1000000 00

3 Per Cent.—4 Years.
EQUAL ANNUAL PAYMENT,
$269,026.87.

Each Year.	Interest.	Principal.
1	$30000 00	$ 239026 87
2	22829 14	246197 73
3	15443 26	253583 61
4	7835 08	261191 79
		$1000000 00

3 1-2 Per Cent.—2 Years.
EQUAL ANNUAL PAYMENT,
$526,400.49.

Each Year.	Interest.	Principal.
1	$35000 00	$ 491400 49
2	17800 98	508599 51
		$1000000 00

3 1-2 Per Cent.—3 Years.
EQUAL ANNUAL PAYMENT,
$356,931.59.

Each Year.	Interest.	Principal.
1	$35000 00	$ 321931 59
2	23732 39	333199 20
3	12062 38	344869 21
		$1000000 00

3 1-2 Per Cent.—4 Years.
EQUAL ANNUAL PAYMENT,
$272,250.17.

Each Year.	Interest.	Principal.
1	$35000 00	$ 237250 17
2	26696 24	245553 93
3	18101 85	254148 22
4	9202 49	263047 68
		$1000000 00

Per Cent.—2 Years.
EQUAL ANNUAL PAYMENT,
$530,196 07.

Each Year.	Interest.	Principal.
1	$40000 00	$ 490196 07
2	20392 14	509803 93
		$1000000 00

4 Per Cent.—3 Years.
EQUAL ANNUAL PAYMENT,
$360,348.53.

Each Year.	Interest.	Principal.
1	$40000 00	$ 320348 53
2	27186 05	333162 48
3	13859 54	346488 99
		$1000000 00

4 Per Cent.—4 Years.
EQUAL ANNUAL PAYMENT,
$275,490.24.

Each Year.	Interest.	Principal.
1	$40000 00	$ 235490 24
2	30580 39	244909 85
3	20783 99	254706 25
4	10596 38	264893 66
		$1000000 00

4 1-2 Per Cent.—2 Years.
EQUAL ANNUAL PAYMENT,
$533,996.47.

Each Year.	Interest.	Principal.
1	$45000 00	$ 488996 47
2	22992 94	511003 53
		$1000000 00

4 1-2 Per Cent.—3 Years.
EQUAL ANNUAL PAYMENT.
$363,773.86.

Each Year.	Interest.	Principal.
1	$45000 00	$ 318773 86
2	30654 95	333118 91
3	15666 63	348107 23
		$1000000 00

4 1-2 Per Cent.—4 Years.
EQUAL ANNUAL PAYMENT,
$278,744.49.

Each Year.	Interest.	Principal.
1	$45000 00	$ 233744 49
2	34481 49	244263 00
3	23489 66	255254 83
4	12006 81	266737 68
		$1000000 00

5 Per Cent.—2 Years.
EQUAL ANNUAL PAYMENT.
$537,804.87,

Each Year.	Interest.	Principal.
1	$50000 00	$ 487804 87
2	25609 74	512195 13
		$1000000 00

5 1-2 Per Cent.—2 Years.
EQUAL ANNUAL PAYMENT.
$541,518.00.

Each Year.	Ineerest.	Principal.
1	$55000 00	$ 486618 00
2	28216 00	513382 00
		$1000000 00

6 Per Cent.—2 Years.
EQUAL ANNUAL PAYMENT.
$545,436.88.

Each Year.	Interest.	Principal.
1	$60000 00	$ 485436 88
2	30873 76	514563 10
		$1000000 00

5 Per Cent.—3 Years.
EQUAL ANNUAL PAYMENT.
$367,208.56.

Each Year.	Intarest.	Principal.
1	$50000 00	$ 317208 56
2	34139 57	333068 99
3	17486 11	349722 45
		$1000000 00

5 1-2 Per Cent.—3 Years.
EQUAL ANNUAL PAYMENT.
$370,654.57.

Each Year.	Interest.	Principal.
1	$55000 00	$ 315654 57
2	37638 99	333015 58
3	19324 72	351329 85
		$1000000 00

6 Per Cent.—3 Years.
EQUAL ANNUAL PAYMENT.
$374,109.81.

Each Year.	Interest.	Principal.
1	$60000 00	$ 314109 81
2	41153 41	332956 40
3	21176 02	352933 79
		$1000000 00

5 Per Cent.—4 Years.
EQUAL ANNUAL PAYMENT.
$282,011.56.

Each Year.	Interest.	Principal.
1	$50000 00	$ 232011 56
2	38399 42	243612 14
3	26218 81	255792 75
4	13428 01	268583 55
		$1000000 00

5 1-2 Per Cent.—4 Years.
EQUAL ANNUAL PAYMENT.
$285,294.82.

Each Year.	Interest.	Principal.
1	$55000 00	$ 230294 82
2	42333 78	242961 04
3	28970 92	256323 90
4	14874 58	270420 24
		$1000000 00

6 Per Cent.—4 Years.
EQUAL ANNUAL PAYMENT.
$288,591.80.

Each Year.	Interest.	Principal.
1	$60000 00	$ 228591 80
2	46284 50	242307 30
3	31746 05	256845 75
4	16336 65	272255 15
		$1000000 00

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2½ per cent., 5 years 30
2½ per cent., 10 years 30
2½ per cent., 15 years 30
2½ per cent., 20 years 30
2½ per cent., 25 years 30
2½ per cent., 30 years 31
3 per cent., 2 years 42
3 per cent., 3 years 42
3 per cent., 4 years 42
3 per cent., 5 years 31
3 per cent., 10 years 31
3 per cent., 15 years 31
3 per cent., 20 years 31
3 per cent., 25 years 32
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3½ per cent., 2 years 42
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4½ per cent., 3 years..... 42
4½ per cent., 4 years..... 42
4½ per cent., 5 years..... 34
4½ per cent., 10 years..... 34
4½ per cent., 15 years..... 34
4½ per cent., 20 years..... 33
4½ per cent., 25 years..... 33
4½ per cent., 30 years..... 34
5 per cent., 2 years..... 43
5 per cent., 3 years..... 43
5 per cent., 4 years..... 43
5 per cent., 5 years..... 34
5 per cent., 10 years..... 34
5 per cent., 15 years..... 34
5 per cent., 20 years..... 34
5 per cent., 25 years..... 35
5 per cent., 30 years..... 35
5½ per cent., 2 years..... 43
5½ per cent., 3 years..... 43
5½ per cent., 4 years..... 43
5½ per cent., 5 years..... 35
5½ per cent., 10 years..... 35
5½ per cent., 15 years..... 35
5½ per cent., 20 years..... 35
5½ per cent., 25 years..... 35
5½ per cent., 30 years..... 36
6 per cent., 2 years..... 43
6 per cent., 3 years..... 43
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